

COMPUTERWORLD

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American Bell, Inc. introduced its long-awaited Sceptre videotex terminal at Videotex '83 last week. Only hours later, a Canadian company announced a software package that appears to make the Sceptre obsolete. Stories on Page 10.

Threat to DEC's Olsen Triggers Fear for Execs

By Bill Laberis
CW Staff

What is the likelihood that the attempted extortion of \$1.25 million from Digital Equipment Corp. President Kenneth Olsen will be replayed elsewhere in the industry?

And what, if anything, are corporations that spend millions to protect hardware, software and trade secrets doing to protect their most valued assets — their top-level executive talent?

These questions emerged after the extortion attempt that began with a life-threatening letter demanding \$1.25 million from Olsen ended in Boston last week with the jailing of a U.S.



Army Green Beret (story on Page 6).

One security consultant contacted last week said computer industry executives are prime targets for life-threatening extortion attempts and other terrorist acts. The reason, he said, is

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Expenditures for Personnel Growing Slower This Year

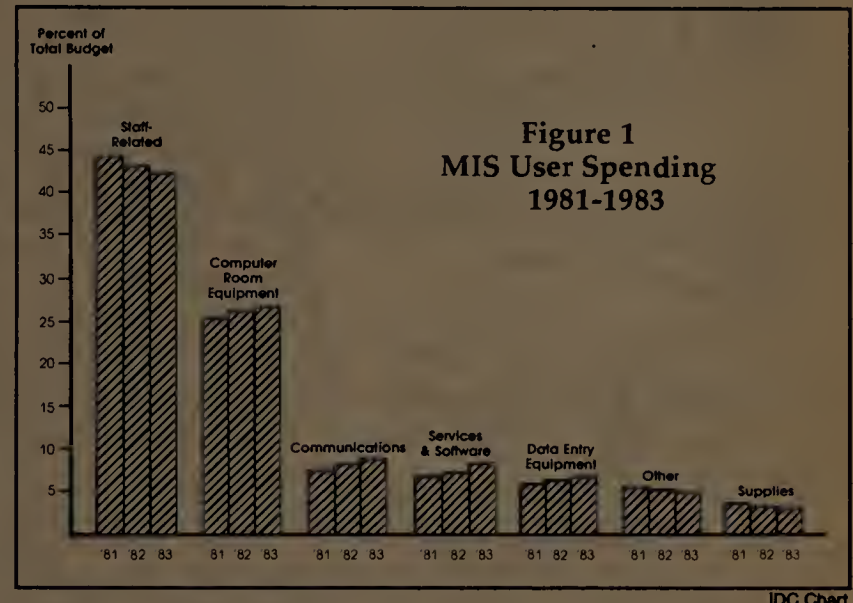
By Marguerite Zientara
CW Staff

FRAMINGHAM, Mass. — Communications and software/services are consuming an increasingly large portion of DP budgets at the expense of personnel costs, according to a recent study of more than 350 user sites by International Data Corp. here.

Staffing costs remain the largest portion of management information systems budgets, although they are steadily declining percentage-wise (Figure 1). Specifically, 1982-1983 staffing costs are expected to grow by only 12%.

Only two other categories — "Other" and "DP Supplies" — were lower, with both growing at 9%, IDC reported.

In contrast, software costs



IDC Chart

in the 1981-1982 period grew by 22.6%, and communications costs grew by 21%. For 1982-1983, they are estimated to grow by 26% and 20%, respectively.

Spending on data entry

and computer room equipment will shrink slightly, growing 16.5% and 15%, respectively, for 1982-1983, compared with 1981-1982 rates of 20% and 17.2%.

(Continued on Page 4)

Coordination the Problem

DSS-DP Conflict Worrying Users

By Paul Gillin
CW Staff

BOSTON — Organizational issues are on the list of nearly everyone faced with implementing a decision support system, according to users interviewed by *Computerworld* at the Third International Conference on Decision Support Systems held here last week.

Of primary interest is how to coordinate the DP func-

tion with that of DSS, which is often administered by a separate group, conference attendees said.

Conflict between DP and DSS is a major issue for Howard Popowitz of Standard & Poor's Debt Rating Services Division in New York, which has had a DSS for about two years. Popowitz was interested in "the level of user involvement in DSS vs. the 'guru' approach,

where one person makes all the decisions. We're also interested in user fairness — how far do you ask the user to go in developing applications?"

For James Burkhart, a resource analyst for the Idaho Power Co. in Boise, Idaho, the issues are "communications, both data and people. Utilities are famous for nobody talking to anybody," he

(Continued on Page 9)

Toxic Chemicals Force Del Monte to Abandon DP Site

By Jeffry Beeler

CW West Coast Bureau

SAN FRANCISCO — A \$3 billion food processing and distribution company shut down and temporarily abandoned its main computing center after a power transformer at corporate headquarters exploded and unleashed a cloud of toxic chemicals.

The explosion and subsequent fire, which occurred on May 15 in a large office building in San Francisco's financial district, caused no damage to Del Monte Corp.'s hardware, programs or data. Nor did the disaster injure any of the company's systems personnel or other employees, according to Del Monte's director of information resources, Fenwicke Holmes.

But the accident did trigger a chemical contamination scare that temporarily banished all 1,200 of the company's headquarters staffers from their work areas and prevented the employees from reaching their terminals. The result was that although Del Monte's IBM 3083-based configuration continued to operate without serious processing interruptions, the firm's users suddenly found themselves unable to gain access to any in-house systems resources, Holmes said.

During a June 27 interview in his company's One Market Plaza headquarters, Holmes likened the explosion to a neutron bomb blast, which takes a heavy toll on personnel but leaves property virtually untouched.

To restore the ties between the firm's users and their central processing system, Del Monte first had to find a new place for its displaced corporate staff to work. That problem overcome, the company began searching for new communications gear to replace the terminals, controllers and other equipment that the headquarters employees were forced to leave behind in their old office space.

Within a matter of days, Del Monte had laid the necessary coaxial cable and had installed new communications hardware in its makeshift corporate work areas, which "are located in office buildings scattered all over the city," Holmes said. During the same time frame, the firm also

replicated its entire telex and telegraph network "from scratch" and "scrounged" emergency key-to-disk machines from two large local businesses.

By May 23, eight days after the explosion, Del Monte's business and systems operations "had pretty much returned to normal," Holmes recalled. "The disaster was a huge inconvenience, but thanks to heroic efforts on the part of both our users and technical people, we were able to continue to meet our customer demands."

By no means, however, did Del Monte emerge from the accident unscathed. The frantic effort to replace the headquarters staff's abandoned

(Continued on Page 8)



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Capacity Planning Less Accurate

DP Execs: CPU Life Spans Shorter

By Tom Henkel
 CW Staff

Newer, faster and more reliable processors, coupled with spiraling end-user demand for computing power, are apparently shortening most processors' useful life spans, DP executives told *Computerworld* recently.

Nine out of the 10 DP executives surveyed said their current processors probably will not last as long as expected. Moreover, the executives added, their long-term capacity planning efforts are not as accurate as they once were.

The DP executives said that on the average, their current systems will last between three and five years; two executives expect their systems to last only two years. Only one of the users polled expects to get seven years out of his processor.

Buying hardware today "takes a hell of a lot of planning," noted Jack Fulcher, director of data processing for GTE Information Services, the division responsible for purchasing all of GTE's commercial systems.

Large corporations have an advantage over smaller firms, he observed, because they can shuttle processors around to several sites, making them last longer.

But even with that option, Fulcher said, GTE Information Services has to do significant planning to make sure it buys the right hardware.

Separate Groups

GTE currently has separate groups to evaluate and purchase hardware. In addition, the firm subscribes to consulting services such as those provided by International Data Corp. and The Gartner Group.

Even with those resources behind it, the company has found that the average life span of a processor in one installation is about five years.

The John Hancock Mutual Life Insurance Co. in Boston once expected its larger processors to last about sev-

Some Suggestions on Planning

"Anytime you have to go to the boss two years later asking to expand or order a new processor, it doesn't go over too well," noted Alan Sarasohn, manager of customer support with BGS Systems, Inc., a Waltham, Mass., consulting firm specializing in processor evaluation.

Noting that a shorter processor life cycle is a common complaint among his clients, Sarasohn said capacity planning is not a hopeless cause, even though technology and the DP work load are both moving at a faster pace.

In most cases, DP shops have to expand to accommodate increased business growth. If top corporate brass would keep the DP department informed of plans to offer new products or services, comput-

er services to support those ventures would be much easier to plan, Sarasohn maintained.

However, corporations sometimes do not inform the DP department of changes in the business structure or product line until the last minute, presumably in efforts of preserving security. The head of DP operations, usually someone at the vice-presidential level, should be responsible enough to be privy to corporate secrets, Sarasohn said.

Furthermore, expansions in the DP department could be conducted without revealing company secrets to the entire DP staff.

Sarasohn recommended that DP executives look at their capacity planning every few months to determine how well it is working.

en years. Last year, that life span was cut to six years and that may be down to four years by the end of 1983, according to Senior Vice-President H. Alfred Colby.

Newer, better hardware is pushing John Hancock to install new processors at a faster pace, principally to support growing data bases and increased user requirements. But Colby thinks shorter processor life cycles are not necessarily a bad thing. The situation would be much worse, he maintained, if John Hancock were growing faster than the technology and could not meet its needs.

Large companies are not the only ones encountering shorter processor life cycles. Small and medium-size firms have had similar problems.

The Pacific Valves Division of Mark Control Corp. in Long Beach, Calif., for example, upgraded its Honeywell, Inc. processor two years after it was installed. Now the firm is planning to switch to a supermini-

computer in hopes of gaining more flexibility to deal with the rapidly changing processor market.

Pacific Valve's DP director, Grahme Jensen, hopes switching to a supermini will allow Pacific Valves to return to a five- to seven-year planning cycle. But "if history is any indication, we will probably be wrong again," Jensen said.

Armstrong Rubber Co. in New Haven, Conn., recently cut its processor planning cycle from five to three years, according to C.R. Pepitone, the firm's director of information services.

Armstrong quadrupled its processing power when it switched from an IBM 370/145 processor to a 4341 several years ago. That increase should be adequate for the near term, but for the future, Armstrong is going to evaluate its processors according to their potential useful lives and approximate value at the end of that life cycle.

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Software Still Missing For DEC's Pro Micros

By Jim Bartimo
CW Staff

Digital Equipment Corp.'s delay in shipping software for its 16-bit Professional 325 and 350 microcomputers earlier this year is showing up now as a drop in sales of those machines, industry experts told *Computerworld* recently.

However, a DEC spokesman maintained that sales of the two micros are "right on target."

But while the industry experts agree that software packages for most applications are now available from independent software firms for the Professionals, DEC has yet to ship much of its own software.

Signs of trouble concerning the two micros arose six months ago [CW, Jan. 24] with reports of hardware delays from users and dealers alike. There were also software snags: a version of Visicorp's Visicalc electronic spreadsheet package for the Professionals was not expected to be ready until March (it has still not been released), and the only word processing available was a basic text editor. True word processing could only be had through the use of an 8-bit card and DEC's Select package.

At that time, everyone from DEC to Visicorp predicted that a library of

software would emerge "in a few weeks," "within six months" and "by March." While third-party software vendors have released word processing packages — Lex-11 from EEC Systems, Inc., for example — Visicorp has yet to release Visicalc for the Professionals.

Contacted recently, Visicorp could still give no specific date for the release of the Professional version of Visicalc. Moreover, a spokesman said the company will release only an advanced version of Visicalc and only for the Professional 350 (see story below).

A number of spreadsheet packages are available from third-party software vendors, including Maps/Pro from Ross Systems, Inc. and Supercomp 20 from Access Technology, Inc., according to Allan Brewster King, product manager for Microcon Software Center, Inc., a DEC dealer in Watertown, Mass.

There is currently little software available from DEC itself. "We have software development going on, but for now we're relying on third-party developers," the DEC spokesman said.

Part of the problem in producing software for the Professional seems to be the complex P/OS operating system that was intended to make micro-to-mainframe file exchange easy, according to industry analyst Don Brown, a vice-president at Shearson/American Express Inc.

The DEC spokesman confirmed that an enhancement for P/OS is scheduled for release this summer, and that an additional "dozen or more" application packages will be available for it.

While the operating system may be a liability today, it is still preventing an erosion of DEC's present customer base and may give DEC one of the few truly integrated micro-to-mainframe product lines around, Brown said. "DEC will be in a much better position in a year," he predicted, "when people start tossing files back and forth on other machines."

DEC's customers may be satisfied with the eventual outcome, but new and retail customers may be gone for good. "We're very disappointed in the approach taken by DEC and the problems they've had in getting the software out," Brown said. "IBM is gunning the market, so I think that the retail outlet success for DEC will be limited."

Even the most enthusiastic DEC-supporting retail outlets admit that sales of the Professionals dropped when customers could not see the software except on a demo. "The unavailability of software set the Professional line back six months," Microcon President Barry Passen said. "Around the time of the Superbowl, DEC did all that advertising for the Professional with all that software being shown on the TV screen. When people came in, we didn't have it."

Passen expects a rush of software "in a few weeks," but, like Computerland of Boston, has switched his sales emphasis to DEC's entry-level machine, the Rainbow.

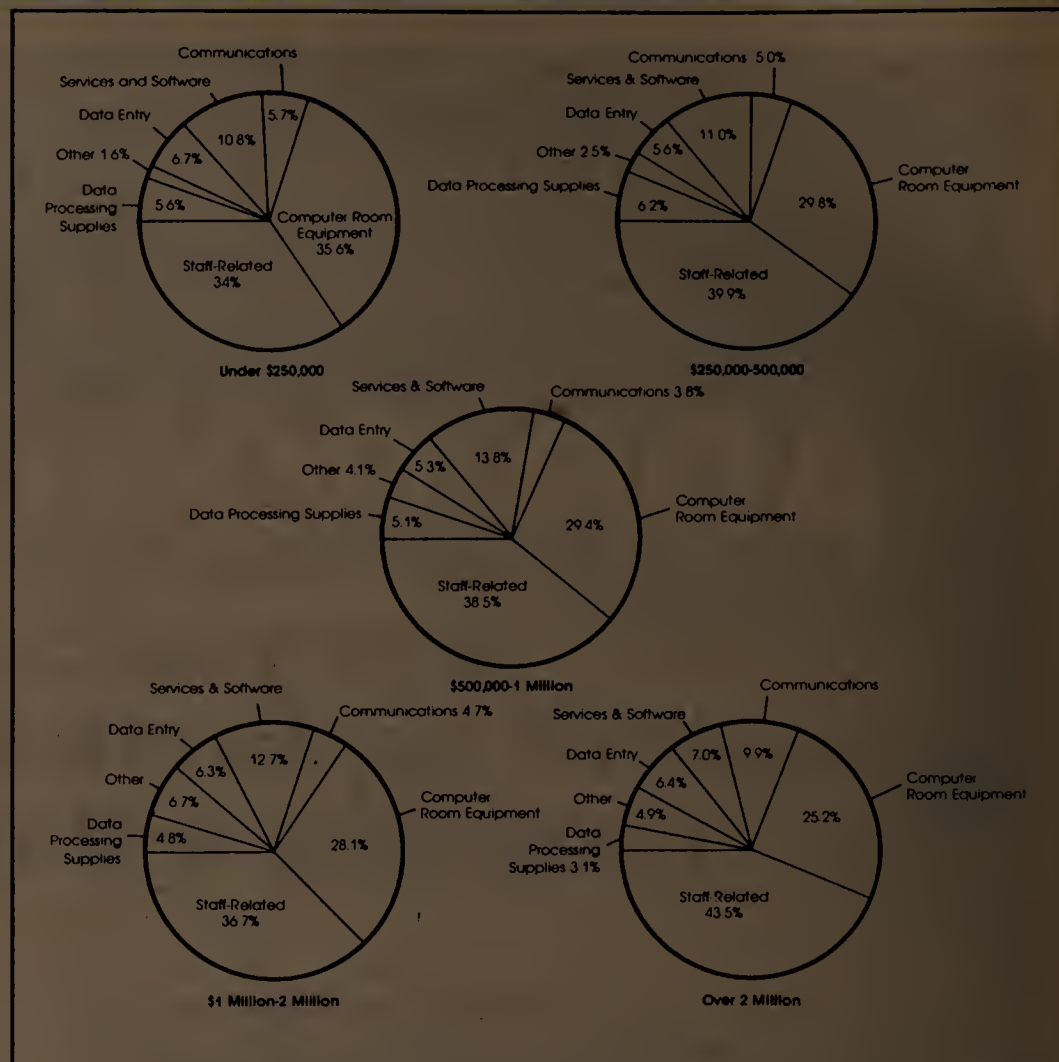


Figure 2: 1983 Expense Categories by Budget Size

Growth in Personnel Costs Slows in '83 User Budgets

(Continued from Page 1)

These were the major findings of "Industry Preview: User Spending," based on a survey of more than 350 installations in 13 industries. The survey tracked actual DP spending for 1981 and 1982 and planned expenditures for 1983.

Besides the survey data, IDC used its data file of computer installations, financial and other publicly available vendor data and vendor-supplied shipment data to identify spending trends.

According to IDC, the budget shifts can be traced to prevailing trends in five areas: economic conditions, personnel shifts, user involvement, communications growth and software growth. "Obviously, the recessionary economy has restricted the growth rate for information processing within most businesses," the study pointed out. "Except for dramatic changes in some market sectors, budgets will stay conservative for the remainder of the year."

Continuing Shift

With hiring freezes and delays commonplace, there has been a continuing shift toward a higher professional level and more technically versatile staff, IDC noted. "This trend has coincided with the increased activity in information processing by users, especially in areas such as user-controlled data entry and micro-level equipment."

The increase in users within an organization has resulted in greater demands for equipment and access to corporate data. "Along with improved technology and lower equipment costs, these factors have continued to stimulate growth in communications and software," the study found.

Generally, the spending trends identified are applicable to all budget sizes (Figure 2): under \$250,000;

\$250,000 to \$500,000; \$500,000 to \$1 million; \$1 million to \$2 million; and over \$2 million.

The lower end of the budget size groups tends to spend a higher proportion of its budgets on computer room equipment and software/services, the study reported. For budgets under \$250,000, the IDC study found that the 1983 computer room equipment spending was 35.6%, compared with the overall 26.3% for 1983 and the 25.2% for budgets over \$2 million.

The smaller size budgets also tend to spend a smaller proportion on communications and data entry, according to IDC. For the \$250,000 to \$500,000 group, 5% of the budget was allocated to communications; the over-\$2 million group allocated 9.9% for 1983. The overall percentage for 1983 communications costs was 8.7%.

Biggest Spenders

Among the 13 industry groups, durables and health/medical services reported the highest percentages for 1983 staff-related expenses — 45.1% and 49.2%, respectively, compared with the overall total of 42.2%.

Service bureaus reported the highest percentages allocated to communications expenses (20%) for 1983, compared with the overall total of 8.7%. However, most of the other expense categories were below the overall percentages, IDC reported.

Educational institutions showed a decreasing trend in computer room equipment spending over the three years, unlike the increasing overall trend in that category.

Among the 13 industry groups, government reported the highest proportion allocated to computer room equipment (29.9%), but was more than 4% below the total of 42.2% for staff-related expenses, according to the report.

People Problems, Complex System Cited in Delays

WELLESLEY, Mass. — "People problems" and a too-complex operating system are the reasons that software for Digital Equipment Corp.'s 16-bit Professional microcomputers has been delayed, a third-party software developer said in a recent interview.

The "people problems" cited by Daniel Bricklin, chairman of Software Arts, Inc., and one of the first authorized third-party software developers for DEC's Professional 325 and 350, center on DEC's relations with his firm and other such-developers.

"For instance, there was a problem on where to put the seal from DEC on the box that shows you're an authorized developer," said Bricklin, who is co-inventor of Visicorp's Visicalc. (Software Arts does not have the marketing rights to Visicalc, but it develops new versions of the spreadsheet program for Visicorp and markets its own package, a business and engineering tool called TK!Solver.)

Moreover, the Professional is "a 256K-byte [main memory] machine, but the operating system takes up a lot of memory." As a result, there is not as much room for software in the memory as there is with some other micros.

Software Arts' version of TK!Solver for the Professional will ship almost on schedule next month, but it would have shipped earlier if the problems cited above had not arisen, Bricklin said.

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Enhances Entry-Level DPS 7

Honeywell Eases Mini-to-Supermini Upgrade

By Ed Scannell
CW Staff

WALTHAM, Mass. — Honeywell, Inc. last week introduced an enhanced version of a low-end system in its DPS 7 family of 32-bit mini-computers. The new system is aimed at strengthening the upgrade path to DPS 7 superminis from the Level 62 minicomputers.

The DPS 7/35E is similar in performance to the DPS 7/35, introduced in 1981. Unlike the 7/35, however, the enhanced system contains a mass storage processor that reportedly permits it to use Honeywell's 80M- and 300M-byte removable disk units without any modifications — a capability not previously available to DPS 7 users.

Basically, the mass storage processor allows Level 62 users to take along their disk files when moving to a DPS 7 supermini.

Besides unveiling the 7/35E, Honeywell last week also announced:

- An entry-level version of its Gcos operating system. Gcos-ES can be used with the low-end DPS 7/35, 7/35E and 7/45 processors.

- An enhancement of its query processor data management tool, containing a Query Report Option module that is said to allow users to customize report formats more easily.

- A 20% to 36% reduction in purchase prices on DPS 7-compatible hardware products. For example, 1M byte of add-on memory now costs \$10,000; a 200M-byte mass storage device has been reduced to \$19,000; 600, 900 and 1,200 line/min printers are now selling for \$14,585, \$29,500 and \$34,500, respectively; and a 120 char./sec console printer has been reduced to \$4,100.

The DPS 7/35E announced last week is capable of storing up to 3M bytes of data in main memory and up to 7.4G bytes of memory on disk, according to Honeywell. It performs

the same functions as the DPS 7/35 and is fully compatible with all other DPS 7 machines. In addition, it can be field-upgraded to the top-of-the-line DPS 7 system.

Besides the mass storage processor, the 7/35E contains two recently developed 9-track, 1,600 bit/in. magnetic tape units that the system supports by way of a new tape adapter. As many as four of the tape units can be connected to a system, a spokesman noted.

An unadorned DPS 7/35E configuration with 2M bytes of main memory, a mass storage processor with 600M bytes of disk storage, a 600 line/min printer and adapter, a 120 char./sec printer and three communications lines is priced at \$223,266.

For Level 62 users transferring their existing disk drives to the 7/35E, the same configuration costs \$166,266. First shipments of the system are expected in the fourth quarter of this year.

The entry-level Gcos-ES is meant to be a stepping-stone, enabling new DPS 7 users to graduate to larger DPS 7 Gcos systems, according to Honeywell. The software can support as many as 24 terminals simultaneously; it is also capable of running two batch jobs at the same time while supporting five time-sharing users.

The operating system comes with a Cobol compiler and has file access and control utilities, as well as distributed processing and transaction processing facilities. Users can add Fortran, RPG and Basic languages to their programming repertoire, the company said.

The Gcos-ES operating system will be available in October for a monthly licensing fee of \$1,150, while the Query Report Option is available for \$100/mo, plus a \$30 monthly expanded support charge.

More details are available from Honeywell at 200 Smith St., Waltham, Mass. 02154.

Threat to Olsen Triggers Security Concerns

(Continued from Page 1)

that many are company founders who have amassed great wealth relatively quickly and are unaware of the vulnerability that such wealth brings. Others "came up through the ranks thinking that petty theft was the worst thing they'd encounter," he said.

And unlike other economic sectors, the computer industry "is characterized by a more carefree corporate environment and attitude, at least compared to the older industries," said Joseph Malley, director of management consulting at Burns International Security Services, Inc. in Briarcliff Manor, N.Y.

Moreover, Malley said, it is hard to sell most executives on a beefed-up corporate security plan because "the typical U.S. executive is not sufficiently aware of what could happen to him... There haven't been enough occurrences, such as what happened at DEC, to sensitize them to the point where they take their personal security seriously.

"It's a heck of a big headache for internal security directors," added Malley, whose business is selling security.

Partial Agreement

One security director of a large multinational computer company, who requested anonymity, agreed in part with Malley. This director, a former FBI agent, said computer industry executives "find it very difficult to accept the fact that they are in positions of power that make them potential targets" of extortionists, terrorists and kooks.

However, he disagreed with Malley that computer industry executives are more likely to be attacked than other industrial executives. "The relatively low profile most computer executives maintain protects them somewhat against these incidents," he explained.

"Often it is the chief financial officer or human resource chief that is

Green Beret Charged in Extortion Attempt

BOSTON — A bizarre plot that began with a life-threatening letter culminated with the jailing last week of a Green Beret charged with attempted extortion of \$1.25 million from Kenneth Olsen, president and founder of Digital Equipment Corp.

U.S. Army Staff Sgt. Marc E. McDonnell, 27, is being held on \$100,000 bail pending a probable cause hearing July 6, when he will answer charges brought by the Federal Bureau of Investigation. The demolitions expert is alleged to have sent Olsen two life-threatening letters and is suspected of blowing up telephone poles near Olsen's Lincoln, Mass., home in a show of force and intent.

According to the FBI and its complaint, Olsen received a hand-printed note on June 2 requesting an 18-month, interest-free "loan" of \$1.25 million. The letter claimed its author was a member of a paramilitary group "perform-

ing still-classified dirty work in Southeast Asia, Africa, Central and South America."

The letter stated the group was soliciting "loans" from some of the "wealthiest people in the country," while threatening a "demonstration of... seriousness in this matter." The letter concluded by saying that Olsen's failure to accede to demands would mean he "will die and we will move on to someone else... there will be no second chances."

Police, FBI Informed

Olsen told local police, who informed the FBI of the threat. Two days later, black detonating cords wrapped around two telephone poles near Olsen's home exploded. No one was hurt.

Four days later, on June 8, Olsen received a second written communique with instructions detailing where and how the money should be delivered. But

the delivery date was June 7.

FBI agents staked out the drop-off site the evening of June 8 and trailed a man, later identified as McDonnell, and a woman and child in their car from the site to nearby Ft. Devens, where McDonnell lived. A search of McDonnell's trash bin the next day produced a draft of the demand letter with McDonnell's fingerprints, the FBI said.

Government agents obtained an arrest warrant on June 16, but McDonnell was with his Army unit in West Germany. Military officials sent him back to the U.S., where he was arrested a week later and charged with the extortion.

Spokesmen for both the FBI and the Army said they were not certain if McDonnell was part of a larger paramilitary group. They offered no comment when asked if other ranking industry executives have been threatened in a similar manner recently.

the target of threatening calls and letters," he added. "And often the responsible party is an unhappy employee or investor."

Detailed Plans

Of several major computer vendors contacted last week, each said it employs detailed personnel security plans extending to the executives' homes and travel schedules. The security measures have been prompted in part by threatening letters and calls received occasionally by corporate executives. For obvious reasons, the vendors declined to discuss details of their security measures.

Joel Watson, assistant to Burroughs Corp. Chairman W. Michael Blumenthal, said Blumenthal has re-

ceived threats "from time to time," but "nothing as serious as what happened to Olsen." Many of the threatening calls and letters screened from Blumenthal's mail have been traced to internal sources, generally a disgruntled employee, Watson said, adding that all such matters are turned over to Burroughs' internal security force.

Many industry executives held ranking posts in the federal government, possibly increasing the likelihood of being a target for threats. Blumenthal served as Treasury Secretary under former President Carter; David Packard, co-founder of Hewlett-Packard Co., served as Deputy Secretary of Defense.

IBM executives have also been the targets of threatening letters and

calls, "although very infrequently," an IBM spokesman said. As at Burroughs, corporate security matters at IBM are handled by an internal security force augmented by outside protection agencies for certain functions and corporate travel plans, the spokesman said.

One leading West Coast computer vendor is said to have installed bullet-proof glass in its executive dining area. This action followed a recent death threat lodged against the company's chief executive officer.

"Physical barriers to the executive suite, like bullet-proof glass or steel-reinforced doors, are not unusual parts of corporate security plans today," said Burns International's Malley. "This is part of the price you pay for getting to the top."

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- Reformat records on output;
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Second Version of System 85 PBX Released

By Bob Johnson

CW New York Bureau

NEW YORK — American Bell, Inc.'s Advanced Information Systems Division announced Release 2 of its Dimension System 85 here last week, along with two new terminals for the voice/data private branch exchange (PBX).

Release 2 adds a new 501CC processor and reportedly offers nearly eight times the line capacity of Release 1, announced in January. It also provides distributed communications capability for larger communications users and a T-1 carrier interface for data applications at high-speed digital transmission rates of 1.544MHz, American Bell said.

The new terminals include the 515 Business Communications Terminal (BCT), an integrated voice/data workstation that accesses the system's voice, messaging and office functions and compatible hosts; and

the 513 BCT, an asynchronous data-only display terminal.

Release 2 of System 85 increases system capacity from 900 to 7,000 stations in a single location, American Bell said. In addition, the company noted that with its Distributed Communications System (DCS), users could have up to 25,000 fully featured stations in geographically separate locations anywhere in the country.

According to Frank Vigilante, division president for product planning and development, the DCS capability allows large corporations to operate two to 12 System 85s as a single system within a building, campus, metropolitan area or even nationwide, with full features and distributed control. Because each processor can function independently if necessary, Vigilante said, users can start with two and add more as their needs expand.

"This announcement follows through with our pledge to current Dimension PBX users to evolve the product line in a consistent way," Vigilante added. "With DCS now on System 85, customers can mix Dimension PBX Feature Package 8 and System 85 in DCS configurations."

Integrated Format Provided

The T-1-compatible interface provides users with an integrated format for multiplexing 24 channels of 64K bit/sec digital transmission onto one carrier, according to American Bell. It also permits modemless switched digital connections between two System 85s, including DCS configurations.

The processor for Release 2, the 501CC, controls a Time-Multiplexed Switch (TMS) that provides the link between the circuit-switching modules. Fiber-optic links between the TMS and the modules transport digi-

tal information at 32M bit/sec.

Vigilante noted that users are also being provided with the option of a 160M-byte hard disk instead of the standard 40M-byte unit on the applications processor for both System 85 and Dimension FP8. He claimed that this allows for larger electronic directory capacities, more call detail processing and added capabilities for electronic document communications users.

A 400-line configuration of Release 2 is priced at \$429,203. With distributed communications capabilities and 6,200 lines, it is priced at \$5,390,234. The 515 BCT costs \$3,385, and the 513 terminal costs \$2,020.

General availability for all products is scheduled for December 1984. More information is available from American Bell Advanced Information Systems, 100 Southgate Pkwy., P.O. Box 1955, Morristown, N.J. 07960.

Chemical Explosion Forces Del Monte to Abandon Site

(Continued from Page 1)

hardware and reconnect users to their on-line systems consumed so much of the company's energies that it was forced to suspend all internal development activities, according to Holmes.

Only now is the firm's systems development operation beginning to return to customary levels of activity. During the roughly seven weeks that Del Monte's application programming ground to a halt or proceeded at less than full speed, the organization lost an estimated seven man-years of systems labor.

"We'll never be able to recover that lost time, and we're now having

to reexamine our development schedule," Holmes said. "The full implications of the disaster are still being assessed."

The explosion also forced the company to shut down completely its business on May 16 and led to the June 17 decision to relocate Del Monte's corporate computing facility to another office building in the city.

On July 8, the corporation is scheduled to transfer its main data center some 600 yards to a workspace currently belonging to On-Line Business Systems, Inc. The move, which local public health officials approved June 18, is expected to be complete July 10.

Circulation System, New CPU Credited With Saving the Day

SAN FRANCISCO — A well-designed air circulation system and a recent upgrade to a new processor prevented a serious accident at Del Monte Corp.'s world headquarters from mushrooming into a catastrophe.

Del Monte's corporate computing center escaped detectable contamination on May 15 when a power transformer exploded in the basement of the firm's seven-year-old, 14-story headquarters building. The explosion produced a fire that vaporized the transformer's coolant, a suspected cancer-causing agent known as polychlorinated biphenyl (PCB), and contaminated the building's basement with toxic chemical fumes.

At the first hint of smoke, the office complex's two central air circulation systems turned themselves off, as they were designed to do. The quick shutdown prevented PCB vapors from filtering through the building's maze of air ducts.

"Our circulation system really saved our rear ends," remarked the company's director of information resources, Fenwicke Holmes.

But although Del Monte's systems

facility was shielded from the explosion's ill effects, headquarters employees were forced to vacate their offices while public health workers scoured the premises for evidence of contamination, none of which was ever found, Holmes said.

By May 17, health officials had finally satisfied themselves that Del Monte's DP staffers could safely return to their corporate computer room. Before leaving the area again eight hours later, the employees completed the company payroll and did several other batch applications. After a one-day absence, during which health authorities tested further for contamination, the systems personnel reoccupied the computer room on May 19 and did another 16 hour's worth of processing. By week's end, the company found itself back on schedule with its key batch processing applications.

Holmes attributes his firm's relatively swift recovery in part to Del Monte's acquisition of a new IBM 3083, the arrival of which preceded the mid-May explosion by only two weeks. Because it operates twice as fast as the IBM 3031 it replaced, the

Timetable for Disaster

Sunday, May 15, 10 a.m. — An explosion in a power transformer wracks the basement of Del Monte Corp.'s headquarters building and produces a fire that spreads to the transformer's coolant, polychlorinated biphenyl (PCB). A cloud of carcinogenic PCB fills the basement and leaks outside, but fails to reach other parts of the building, thanks to an automatic shutdown of the structure's air circulation system.

The fire burns undetected and soon triggers a power outage. Error messages appear on Del Monte's systems console and are noticed by an operator, the only member of the 150-employee DP staff on duty at the time. Within a few seconds of the electricity failure, the company's IBM 3083 mainframe switches to auxiliary power.

After observing smoke in a stairwell, the operator calls the building's control desk supervisor, who orders her to evacuate immediately. The operator hurriedly stores her employer's critical magnetic tapes in a security vault and flees before she has a chance to turn off the system's auxiliary power.

11 a.m. — City fire fighters have arrived on the scene and are well on their way toward extinguishing the blaze in the building's basement.

Monday, May 16 — Local public health authorities permit Del Monte's DP staff to return to the computing room long enough to shut down the facility's auxiliary

power. The employees are then required to leave the building immediately. For the whole day, Del Monte is unable to conduct ordinary business.

Tuesday, May 17 — DP employees are again admitted to the headquarters, where they run the company payroll, which is usually processed on Mondays. Eight hours and several other batch applications later, the workers are ordered to leave.

Wednesday, May 18 — The building at One Market Plaza is again closed to all DP personnel while health officials and cleanup crews check the computing department for signs of PCB contamination.

Thursday, May 19 — After the machine room gets a clean bill of health, systems employees report to work and stay for 16 hours before the local health department asks them to vacate the premises.

Saturday and Sunday, May 21-22 — Sales orders that were supposed to have been processed on Friday, May 20, are completed during the weekend instead. At this point, the company's batch processing operations return to normal.

Wednesday, May 25 — Del Monte's DP support area, which houses the firm's data entry department, is reoccupied for the first time since the disaster. For 10 days, concerns about possible PCB contamination had prompted health officials to declare the support area off limits to Del Monte's employees.

3083 rapidly eliminated the company's sudden backlog of unfinished batch applications.

When the May 15 explosion produced the large quantities of toxic PCB, local public health officials were at first reluctant to allow the company's data entry operators to return to their work areas. Not until 10 days after the explosion did data entry personnel finally return to work,

Holmes said.

Many other sections of the building, however, remain off limits and appear unlikely to be reopened soon. Because many of Del Monte's employees have been unable to return to their work areas and reclaim their terminals and other equipment, the corporation has been forced to acquire large quantities of replacement hardware.

Express DSS Linked With '1-2-3' for IBM Micro

By Paul Gillin
CW Staff

WALTHAM, Mass. — Management Decision Systems, Inc. last week cleared a path for the integration of IBM Personal Computers into a network centered on its Express information analysis and modeling software. The company announced it will become a value-added reseller for Lotus Development Corp.'s 1-2-3, a Personal Computer-based spreadsheet, data base management and graphics package.

Management Decision Systems also announced Express-Link and Express-Mate, two packages that it said link more closely software running on the Personal Computer with the

Express data base. The company also released a version of Express for the Prime Computer, Inc. Prime 2250 minicomputers and another for marketing applications.

Called 1-2-3 Express, the integrated package will allow access from the Personal Computer to Express data and analysis tools, the company said. Enhancements to 1-2-3 include:

- A communications facility for automatically logging into Express and exchanging data.

- A host computer data base providing tools to assemble 1-2-3 work sheets, including labels, text, models and data.

- Audit mechanisms that allow administrators to monitor which users have accessed which version of

the data.

- Data extraction capabilities to transform Express output to 1-2-3 work sheets.

- The 1-2-3 macro language extensions that add series of menus for performing Express-like tasks.

- A support and training program for the integrated packages.

The cost of 1-2-3 Express is \$945 per package. Current users of 1-2-3 can buy the enhancements for \$450.

Express-Link is a Personal Computer package that automatically re-formats data to enable Express to communicate with a variety of microcomputer programs, including 1-2-3; Visicorp's Visicalc; Software Products Co.'s Procalc; Micropro International Corp.'s Wordstar; Addi-

son-Wesley Publishing Co.'s Micro-DSS/Finance; and Data Resources, Inc.'s Visilink. Express-Link can be used to retrieve a two-dimensional slice of information from an Express data base by answering prompts, the company claimed.

Express-Mate is a communications product that lets the Personal Computer function as an Express workstation. Features include automatic login; scrolling up to four pages; recall of previous input commands; local editing; file transmission and reception; and color graphics support.

Express-Link and Express-Mate each costs \$250 with the two available as a package for \$450 from Management Decision Systems, 200 Fifth Ave., Waltham, Mass. 02254.

DSS-DP Clash Worrying Users

(Continued from Page 1)

said. "Communications basically break down in management. They're not understanding what we're doing and we're not talking to them."

Martin Karl, a senior financial research analyst at Boston Edison Co. in Boston, cited "the politics of interplay between DP and the user community" as a major issue of concern. "The unwillingness of DP to let micros be used is a barrier to implementing an effective DSS," he said, but he had been reassured to find "that others have had some of the same problems."

Most attendees were curious to find out what is new in DSS technology. "We have an existing DSS and we're looking to refine it," said J.N. Kotanchik, a senior economic specialist in the Products Economics Division of Shell Oil Co. "We're looking for a fully integrated system and compatibility with minis and micros. A lot of thought is going into [our DSS]. The question is how to translate that into action," he said.

Charles Boyle, information manager in the supplies division of Wang Laboratories, Inc., was looking for "good ideas about how to bridge the gap between the users and the hard facts and administration of some of these systems." Boyle was particularly concerned with controlling data bases so that information is not duplicated.

Booklet Analyzes Accounting Tools

ROCKVILLE, Md. — Computer Training Services has announced "Introduction to Microcomputer Accounting Systems," which analyzes selected financial and accounting packages from Peachtree Software, Inc., Open Systems, Inc., BPI Systems and IUS.

The booklet includes a narrative and comparative matrix, which covers all data elements of the master files, all transaction components, audit trails and reports. Sheldon Needle, president of Computer Training Services, installed each system and operated all menu functions.

The booklet is available for \$35 from Computer Training Services, 5900 Tudor Lane, Rockville, Md. 20852.



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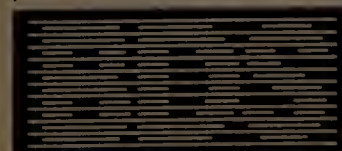
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American Bell Unveils Videotex Terminal . . .

By Phil Hirsch

CW Washington Bureau

NEW YORK — American Bell, Inc. unveiled AT&T's long-awaited videotex terminal here last week at the Videotex '83 conference. The Sceptre will go on sale for \$600 in the Miami area next September, when the telephone company and Knight-Ridder Newspapers, Inc. are scheduled to begin a residential videotex service called Viewtron.

Numerous hints about follow-up products to Sceptre were dropped during American Bell's presentation. One possibility — a personal computer capability.

"Personal computers and videotex are converging," said Project Manager Carolyn Chin. "We are looking at the options." Other possibilities include lower prices as a result of declining chip costs and a terminal that can access only alphamosaic graphics. The present terminal also accommodates alpheometrics, which raises its cost.

Sceptre Follow-Up

The middle of next year would be a good time to look for the first follow-up to the initial Sceptre offering, another American Bell official said.

Last week's unveiling of Sceptre included a decoder and wireless key pad. The latter, which communicates with the former via infrared signals, includes a 42-button Qwerty keyboard, 10 command keys, eight host-programmable function keys, one-button access to a maximum of 15 stored telephone numbers and automatic last-number redial capability.

The decoder includes a 1,200 bit/sec synchronous/asynchronous modem plus ports for an extension phone and printer.

Sceptre accesses the telephone network through Local-Area Data Transport, a scheme allowing digital data and analog voice to be transmitted simultaneously on a conventional analog local loop. If the viewer receives a telephone call while watching the display, a message appears on the screen. If the viewer has an extension phone, he can answer it without leaving his television set.

The new terminal supports the North American Presentation Level Protocol Syntax (NAPLPS), the graphics display standard AT&T is proposing as a U.S. and world videotex standard. NAPLPS is compatible with Canadian and French videotex formatting schemes but not with that

CW at Videotex '83

of the British.

Sceptre also supports the Data Encryption Standard developed by IBM and the National Bureau of Standards.

The display supports a palette of 512 colors, 16 of which can be displayed simultaneously. The screen provides a resolution of 256 pixels by 200 raster scan lines.

By Phil Hirsch

CW Washington Bureau

NEW YORK — A few hours after American Bell, Inc.'s Sceptre videotex terminal was unveiled here last week at the Videotex '83 conference, a Canadian company announced a software package that appears to make the terminal obsolete.

The two product announcements reflect in dramatic fashion how the prices of videotex components are dropping, making it likely that the mass market which videotex promoters have been promising for years is finally about to materialize.

The software announced last week by the Avcor Division of Southam Communications Ltd., a major Canadian videotex vendor, converts a Commodore Business Machines, Inc. Commodore 64 personal computer into a North American Presentation Level Protocol Syntax (NAPLPS) decoder. Priced at \$100 and available in 45 days, the software will be stored on disks and cassettes, said Avcor Vice-President Zal Press.

Avcor, headquartered at 512 King E., Toronto, Canada, is currently negotiating with a number of data base services — Compuserve and The Source were among those he specifically mentioned — to download the software, Press added.

Based on the prices quoted by Press, a videotex user could implement the whole system — even if he had to buy the Commodore 64 — for less than the price of AT&T's new terminal; moreover, he would also end up with a personal computer.

A package that converts the IBM Personal Computer into a NAPLPS decoder will be available from Avcor in about 90 days; by the end of the

Sceptre terminals will be marketed through American Bell Phone Centers and selected retail establishments, American Bell said. A massive advertising campaign that includes public demonstrations in shopping centers and schools will be launched in September.

American Bell said the terminal's initial price of \$600 will be raised to \$900, but it did not say when. The cost to American Bell of manufacturing the terminal has been widely reported to be at least \$1,000.

According to Clarence Selin, American Bell's director of consumer

information services, the market for the terminal is mostly residential but includes work-at-home and some business applications. He estimated the total prospective Sceptre residential market in the Miami area at roughly 200,000 households.

American Bell clearly hopes its collaboration with Knight-Ridder will create new markets. Besides Miami, Knight-Ridder publishes newspapers in several other cities and has announced plans to establish Viewtron services in many of them. It has also interested other publishers in establishing Viewtron-like systems.

. . . But Software Could Make It Obsolete

year, packages for the other leading personal computers will be available, promised Avcor President Robert Baum. Roughly 5 million personal computers are now installed in the U.S., he noted.

Videotex Costs Nose-Diving

A Videotex '83 session entitled "On the Cutting Edge" provided more evidence that technology is causing videotex system costs to nose-dive. Vendor representatives at that session discussed new products that their companies introduced last week at Videotex '83:

- A Videotex Office and Information System based on the Radio Shack TRS-80 Model 16B microcomputer and designed for both private and public applications was announced by Tandy Corp. The latter include providing dispersed company locations access to inventory, accounting and similar in-house data bases. The user terminal is a personal computer. Costs reportedly range from \$13,500 for a 200-user system to \$60,000 for a 12,500-user system, from Tandy at 1700 One Tandy Center, Fort Worth, Texas. 76102

- Quazon Corp. announced that Horizon Bancorp, a New Jersey-based bank holding company, will begin a home banking service in September based on Quazon's Custom Quik-Link terminal. Each terminal costs "less than \$199," said Marketing Vice-President James Lokey. Earlier, Quazon won a contract from Travelhost, Inc. to supply 500,000 copies of a similar terminal over the next three years. The first ones were recently installed in Chicago's Midland Hotel, where they are being used by guests to access a variety of data base services [CW, June 6]. Quazon is headquartered at 3330 Keller Springs Road, Carrollton, Texas 75006.

- Telelogic discussed its new Tex decoder, which interfaces Prestel videotex terminals to telephone circuits. It costs \$100 — reportedly one-third the price of current Prestel decoders in the U.S. Telelogic is selling the decoder for \$100 because it uses the telephone key pad in place of a keyboard, and there is no modem. The modem is replaced by existing circuitry within the telephone plus a simple demodulator. Telelogic is located at 196 Broadway, Cambridge, Mass. 02139.

Tex was invented by Stuart Lipoff, an electronics expert and market researcher at Arthur D. Little, Inc. Li-

poff said at the conference that the decoder is cheap enough to be given away by videotex system operators.

A printer peripheral is reportedly due in December. It will also be priced at about \$100.

- Circuit boards from Wolfdata, Inc., reportedly convert IBM Personal Computers into Prestel and/or NAPLPS decoders. Prices range upward from \$495 from the firm located at 187 Billerica Road, Chelmsford, Mass. 01824.

- A videotex system from The Shuttle Corp. features a 17-key user terminal priced at \$175; a 56-key version costs \$250. The Shuttle, located at 2565 152nd Ave. N.E., Redmond, Wash. 98052, also markets, via satellite, a videotex information service priced at \$5/mo and \$3 to \$4/hour of connect time.

- A company associated with Shuttle Corp., Microperipheral Corp. (same address), announced a receive-only modem, retailing for "less than \$70." It allows software to be downloaded to a personal computer using commercial radio frequencies, together with a conventional radio at the user's end of the transmission path.

AMS Releases Report on OA

WILLOW GROVE, Pa. — A report that incorporates surveys of over 4,000 managers, experts and employees to provide information and recommendations for managing human resources in the office of the future has been released by the Administrative Management Society (AMS).

The report, "The Office Revolution: Strategies for Managing Tomorrow's Work Force," reveals that managers and employees have very different views toward the automated office. Managers are more concerned with justifying and implementing automation, whereas employees focus on the people/automation relationship, a spokesman said.

The study also outlines 49 potential problems of implementing automation and recommends solutions, the spokesman said.

The report costs \$14.95 for non-members, \$10.75 for AMS members, from the AMS Foundation, 2360 Maryland Road, Willow Grove, Pa. 19090.

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Multimillion-Dollar Network Credited Results of World Games Out in Record Time

By Ed Scannell
CW Staff

EDMONTON, Alta. — No more than four seconds after the completion of the 100-meter swimming final at the 1983 World University Games, spectators watching the track and field events at Commonwealth Stadium five miles away will know who won.

That is what five man-years of software development and \$2.1 million get you — instant results.

As an international sporting event, the University Games now taking place here are second only to the Summer Olympics in size. The various competitions, open to university athletes between the ages of 17 and 28, are expected to attract 700,000 people over 10 days. But the sheer size of the games means that individual events will take place at 19 different locations here.

Tying together this athletic three-ring circus is a multimillion-dollar computerized results network that will compile and distribute to all other locations the results of each event within seconds after its completion. The network was designed and installed by Digital Equipment of Canada, Ltd. and is based around two VAX-11/780 superminicomputers connected via telephone lines to 50 VT100 terminals and 30 LA120 printer/terminals located in 19 venues across the city.

The network is similar to the one DEC put together for the 1978 Commonwealth Games, also held here. But like the athletes whose performances it will be recording, this latest version of the network is faster and more flexible than the one used five years ago.

Sophisticated Version

Deborah Johnston, a spokeswoman for DEC Canada, used the swimming competition as an example of how much more sophisticated the second version of the system is compared with the first. The first version of the system, which was connected to an Omega clock timing the events, would record swimmers' times from when they left the starting block until they touched the electronic touchpad. "But with the second version, we have written an interface so that not only does the clock start and stop when a swimmer starts and finishes, but their times will be sent straight to the computer.

"What this means is that four seconds after a competition has been completed, spectators can find out who won or lost and what their times were anyplace there is a terminal."

Besides being sent to the other 18 venues, the swimming results will also be sent directly to the Commonwealth Stadium's scoreboard, the wire services, broadcasters' booths and to terminals located in the "athletes' village" and the print shop. From the information it receives, the shop will be able to print the previous day's results in its daily newspaper and venue programs, a DEC Canada spokesman said.

But not all results can be entered into the computer and distributed automatically, noted Larry Samoil,

manager of technical services for the games. Some results, like those from track and field, have to be put into the system manually.

"As track competitors cross the finishing line, a camera is used to record their times. The film is taken from the camera, developed in something like 20 seconds and put in a viewer where officials can then read the times. While that is being done, we have an input terminal in the timing room where that information is entered.

"However, the timing room is located some 500 or 600 feet away from the scoreboard operations, and it is not easily accessible," he explained.

But even when things have to be entered manually, results can be shown on the local venue's scoreboard and on the scoreboards of the other 18 venues in four to six minutes, Johnston noted. "Certainly, you should be able to get the results in 10 minutes, and that is assuming someone is a slow typist or maybe the runner bringing the result over tripped along the way," she quipped.

One Solution

Samoil said one solution for recording the track and field results faster is to send the information from the timing room to the scoreboard room over telephone wires, but that

method is "too prone to error."

Along with recording and distributing results, the network also has an inquiry mode that enables users to call up information on schedules, event start lists, personal information on athletes, country information, world records and historical data on the games.

DEC Canada said over 170 terminal operators will work a total of 900 individual shifts and are expected to handle 30,000 individual entries and inquiries during the 10 days. Operators with very little computer experience will be able to use the system because of its hierarchical system of menus.

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Terminals, Peripherals Debut at Graphics Meet

By Jim Bartimo
CW Staff

CHICAGO — Terminals and peripherals topped the list of products unwrapped here last week at the National Computer Graphics Association's annual meeting (NCGA '83). Notably lacking was any great number of major software announcements.

Tektronix, Inc. offered both a family of color graphics terminals and a programmable CPU that will give those terminals stand-alone capability.

The 4100 series of color graphics terminals was designed for data analysis, presentation graphics, computer programming and text editing. It supports Ansi standards for text editing in the dialog area and will execute most Digital Equipment Corp. VT100 terminal programs, Tektronix claimed.

The Models 4105 and 4107 are color raster-scan displays with 13-in. screens that sell for \$3,995 and \$6,950, respectively. The Model 4109 features a 19-in. display for \$9,950.

The 4170 Local Graphics Processing Unit will convert any of these new terminals into a stand-alone processor running Digital Research, Inc.'s CP/M 86 operating system. The processor is available for \$5,500 from Tektronix, P.O. Box 1700, Beaverton, Ore. 97077.

Connecticut Committee to Study CRT Safety Issues at Home, Work

HARTFORD, Conn. — Connecticut has become the second state to authorize a study of CRT safety issues, this time in the home and work place.

Following Maine's recent statutory resolve ordering a two-year study of state and public CRT-related jobs [CW, June 27], Connecticut Gov. William O'Neill recently signed into law S. 811, which calls for the Department of Consumer Protection to report on its findings by Feb. 23, 1984.

With the assistance of its Product Safety Division and the Connecticut Academy of Science and Engineering, the Department of Consumer Protection must address the following questions:

CW at NCGA '83

Ramtek Corp. unveiled a thermal printer said to produce hard copy on color paper or overhead transparencies in less than 60 seconds. The 4111 Colorgraphics Printer reportedly produces a duplicate of the CRT screen by using a subtractive color transfer process.

The thermal printer is available for \$6,500 from Ramtek at 2211 Law-

Major Vendors Include Prime, CDC

Product Offerings Target CAD/CAM Mart

CHICAGO — Prime Computer, Inc. and Control Data Corp. were but two major vendors introducing products for the computer-aided design and manufacturing (CAD/CAM) market at National Computer Graphics Association's NCGA '83 here last week.

Prime added another unit to its Prime Workstation 200 series of intelligent workstations. The PW200T, designed for remote communications, features a 32-bit processor, interactive devices and dedicated modules of Prime's Medusa two- and

son Lane, Santa Clara, Calif. 95050.

California Computer Products, Inc. also unveiled an output device, its Model 84 eight-pen plotter. The plotter produces charts, graphs and drawings on paper or overheads, a vendor spokesman said.

The plotter can be used with minis, micros or mainframes through the use of three interchangeable interfaces. It is available for \$1,995 from Calcomp, 2411 W. La Palma Ave., Anaheim, Calif. 92801.

Eastman Kodak Co. introduced a unit said to produce instant color prints of images displayed on any 12-

or 13-in. CRT screen. The Instagraph CRT Imaging Outfit attaches to the CRT and photographs the screen with instant film.

The Instagraph can be used in hard-copy presentations or as a backup system to other output devices, the vendor said.

Included in the package are a camera with close-up lens, two packages of film, a CRT cone, an instruction manual, filter and brackets for adapting a 35mm single-lens-reflex camera to the cone. It will be available in August for \$195 from Kodak, 343 State St., Rochester, N.Y. 14650.

three-dimensional CAD package.

The workstation also includes a dedicated module of Primenet software and a communications interface. This is said to allow synchronous, remote communications over leased line or via public data nets.

The workstation is available in a number of configurations ranging in price from \$66,000 to \$106,000. Prime is home-based at Prime Park, Natick, Mass. 01760.

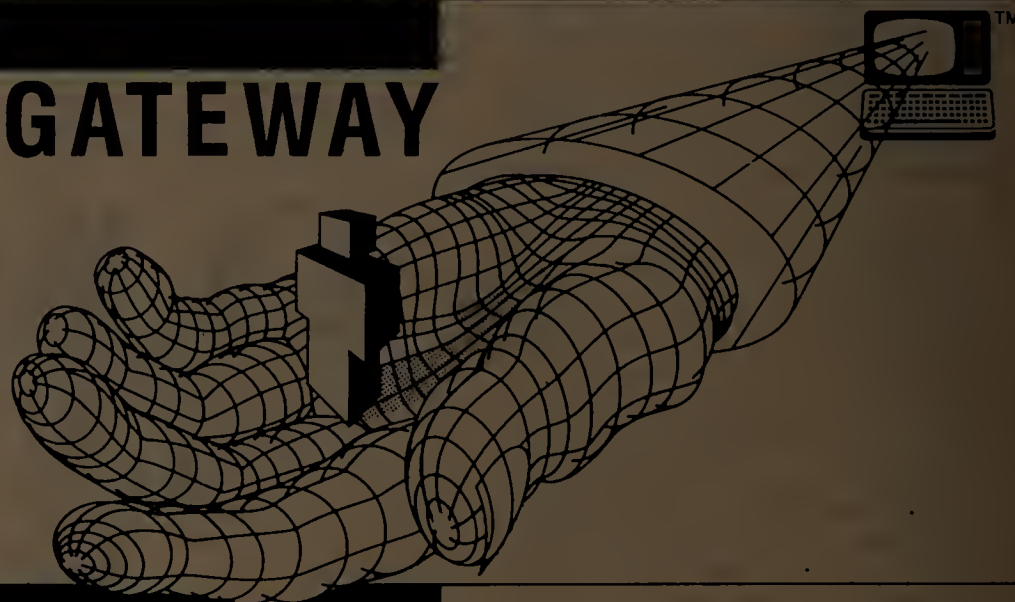
CDC brought out a CAD and drafting system to be hooked up through its Cybernet data services network or directly to a Cyber 170 mainframe. Included with the system are CDC's Icem/120-40 desktop

workstation, CD/2000 software and the Advanced Operating System, a CDC spokesman said.

The CAD system is available for approximately \$50,000. More details are available from CDC, Box O, Minneapolis, Minn. 55440.

Applicon, Inc. introduced a CAD/CAM system based on the Digital Equipment Corp. VAX-11 supermini. Bravo includes a menu-driven user interface, a data base management system, an Applicon programming language and application packages. Prices for the fully configured Bravo system begin at \$120,000. Applicon is located at 32 Second Ave., Burlington, Mass. 01803.

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CAD/CAM Hot Topic For Show Attendees

By Jim Bartimo
CW Staff

CHICAGO — While the subject of business graphics dominated the well-attended technical sessions here last week at the National Computer Graphics Association's NCGA '83 show, opinions offered by people on the exhibit floor suggested a different focus.

A random sampling of 10 vendors, users and analysts at NCGA '83 found that graphics, although attractive to the business user, is still very much the domain of engineers and designers. Computer-aided design and manufacturing (CAD/CAM) is still the hot area.

Moreover, while some microcomputer graphics vendors reported good business, the show's exhibit floor was not dominated by end users and DP managers.

Graphics Pros Attracted

"The show appears to be attracting graphics professionals more than the MIS [management information systems] manager," said industry analyst Neil Kleinman of International Data Corp.'s Pacific Technology Center in Santa Monica, Calif., suggesting that "it's a show that integrates many things, and perhaps some of the MIS gets lost in it."

Like most attendees, "I'm here to see what's new in CAD/CAM," said a programmer employed by HPM Corp., an Ohio-based injection molding machine manufacturer. "There's a lot of it here."

One computer support service manager was found eyeing the business software at Digital Equipment Corp.'s booth. "We're about to launch into office automation in the research and development environment," said Gus Mercurio of the Akron, Ohio-based Goodyear Tire and Rubber Co. "Graphics is going to be an area of interest, and we're starting to support micros. Our long-range plan is to use personal computers as terminals and get the best of the mainframe, too."

Another DP manager was found lingering around some output devices, but he was shopping for CAD/CAM. "Right now, we have an entry-level graphics system, but I'm looking to see what's new in CAD/CAM," said Jerry Dusinski, DP manager at Triangle Package Co., a Chicago package machinery manufacturer.

Despite the lack of MIS executives at the show, some microcomputer peripheral manufacturers, such as Sof-

CW at NCGA '83

tel, Inc. of New York, reported much interest in its business software and hardware add-ons that bring higher resolution graphics to some micros.

Small Firms Using More Graphics

CHICAGO — Business graphics, once reserved for large companies with mainframe computers, are being used increasingly by smaller companies with microcomputers.

That was one of the conclusions in a study recently conducted by International Data Corp. (IDC) and reviewed here last week at the National Computer Graphics Association's NCGA '83.

The research firm's study of 200 users also found that:

- Most graphics are used for manage-

ment presentations (94%) or for planning and forecasting (90%).

- While 97% of graphics are traditional bar, pie and line charts, other applications such as organizational charts (66%) and logos and illustrations (64%) are also popular.

- Sixty percent of all graphics are produced on paper and 18% are produced on CRT screens.

- Productivity has increased among 94% of the respondents, and the demand for graphics has risen as a result.

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International Report

FROM THE CW INTERNATIONAL NEWS NETWORK

AUSTRALIA

SYDNEY — The Teletel videotex system from France's Intelmatique was chosen over the British Prestel system to serve the travel industry here. The multimillion-dollar Australian Federation of Travel Agents contract will result in a videotex service called Aftel, providing access to airline schedules, tour information, hotel reservations and car rental information. Computer Accounting Services Pty. Ltd., a major Australian time-sharing bureau, will run the videotex software on Honeywell, Inc. DPS 6 minicomputers. The videotex service will begin operating in October; a network of 800 Minitel (French stand-alone terminals) are slated to be installed in the first 20 months.

GREENWICH — Armed with new venture capital funds, Apollo Computer Equipment Pty. Ltd. announced it will set up manufacturing operations in St. Paul, Minn. The company produces interfaces that allow different printers to be attached to IBM System/34 and System/38 computers.

SYDNEY — Qantas Airways Ltd. is increasing its computing power with the addition of two Amdahl Corp. 550-5850 mainframes. The two machines will replace two Amdahl 470V/6s, according to Alan Bullock, Qantas' manager of computer and communications planning.

DENMARK

COPENHAGEN — Because of a severe lack of experienced DP workers here and increasing unemployment among lower level programmers, Denmark's two DP unions (Prosa and Samdata) have started actively campaigning for new jobs in smaller companies. Meanwhile, Christian Rovsing A/S, Denmark's largest DP employer, has asked for government help in recruiting 100 experienced DP people from other countries.

COPENHAGEN — Ejler Ottosen, a

Danish systems programmer, has introduced a data base management system that is "sort of a fourth-generation language." The International Data Base System has been well-received, according to industry sources.

FRANCE

GRENOBLE — Symag, a small microcomputer manufacturer, has introduced a personal computer based on Intel Corp.'s IAPX 186 microprocessor. Called Orchidee, the system will run Digital Research, Inc.'s CP/M-based software programs with a Zilog, Inc. Z80 microprocessor and Digital Research's CP/M 86 software and Microsoft, Inc. MS-DOS software with the Intel microprocessor, according to a spokesman for the vendor. The 16-bit version of Orchidee, with 256K bytes of random-access memory and two diskettes, is priced at \$6,500, a spokesman for the vendor said. In a related announcement, the spokesman for Symag said it has reached a technology-transfer agreement with the Republic of Madagascar's Intergovernmental Bureau of Informatics.

PARIS — "We will deliver our first PBX [private branch exchange] systems to the market by July 1, 1984," stated Raymond Jacobson, chairman of Anderson Jacobson, Inc., at a recent press conference here. According to Jacobson, Anderson Jacobson will introduce two PBXs, one aimed at installations calling for up to 250 lines and the other for applications dealing with 250 to 1,000 lines.

BRAZIL

SAO PAULO — More than 4,000 technical people and computer industry experts are expected to attend Informatica '83, Brazil's largest official national computer fair, scheduled to take place here Oct. 17-23. The annual event, which is sponsored by the Brazilian government, will feature equipment from data processing, communications, telecommunications, graphics and office automation equipment vendors.

Conference headquarters are located at Suesu Sao Paulo, Av. Paulista, 1159 - 14 andar, cj. 1404, 01311, Sao Paulo, SP, Brazil.

JAPAN

TOKYO — Two American companies with their own versions of the Basic language are in competition here in response to the Japanese personal computer vendors' movement to adopt an industry standard version of Basic. Microsoft, Inc. has recommended its MSX-Basic, and Digital Research, Inc. plans to introduce another version of Basic as an alternative in the near future.

TOKYO — Sofmap, one of the leading companies in the market for renting personal computer software, is being sued by eight software vendors here for infringement of their copyrights. The vendors are suing to prohibit rental shops from lending their software products to individuals who copy the software for their own use.

TOKYO — Y.E. Data, Inc. plans to increase by more than double its floppy disk drive production in response to heavy demands for its product line.

TOKYO — Hitachi Ltd. announced that its net income increased 10% and its sales rose 7% in the fiscal year ending March 31. Net income rose from \$571 million to \$627 million, while sales jumped from \$15.35 billion to \$16.43 billion, a company spokesman said.

NAGOYA — Mitsubishi Electric Corp. recently established Mitsubishi Electric Mechatronics Software Corp. The new company will devel-

op and manufacture software for control equipment for mechatronics products, such as robots and other factory automation devices.

UNITED KINGDOM

BERKSHIRE — A survey of IBM mainframe sites in the UK has shown that application software, which takes companies roughly 10 months to develop and costs about \$800,000, is replaced, rewritten or simply thrown out every year at each installation because it is considered obsolete. Furthermore, 20% of the sites regularly discard work that takes longer than one year to replace. The survey, called "Application Development in Practice," was conducted by Xephon Technology Transfer Ltd. of Berkshire.

WEST GERMANY

MUNICH — The relationship between IBM and its Share European Association users group has begun deteriorating after IBM announced its new policy to restrict source code. While IBM argued that the restrictions are intended to protect the software from plagiarism, German users felt the move was aimed at making non-IBM products harder to use and, therefore, less attractive.

FRANKFURT — Control Data Corp. recently won back Siemens AG as an OEM partner.

COLOGNE — The First European/U.S. Microcomputer Show took place here June 23-26 and featured microcomputers for businesses, home users and hobbyists. The fair was cosponsored by the U.S. Embassy and the German conference company, Koeln Messe.

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Software AG Users Group Juggles Question of Whether To Seek More Independence

By Lois Paul
CW Staff

NEW ORLEANS — The question of whether to seek more independence from its vendor arose during the recent annual conference here of Software AG of North America, Inc.'s international users group (Saggroup).

Although the jury is still out, the feeling among Saggroup's executive committee members is that the group will maintain its current relationship with Software AG, one that has worked well in most respects.

A motion was passed at the conference authorizing the executive committee to explore the possibility of separating the administration of Saggroup from Software AG. The issue central to the motion appears to be concern that a better means is needed to gather and maintain specific information about product users.

The users group currently relies on Software AG for information about users. When a member of the executive committee gets a call from one user trying to find other users with similar configurations and problems, he cannot always quickly refer the user to appropriate installations.

No Immediate Separation Seen

Despite this problem, Saggroup's President — Jennifer C. Lee, data base administration manager for Aerospace Corp. in El Segundo, Calif. — does not feel a separation of the users group from the vendor will take place "anywhere in the measurable future. On the whole," she added, "we have a very good relationship with Software AG."

While Lee admitted that "one thing we find lacking is a users group tool to contact other users and get hold of them quickly," she believes that accumulating and maintaining a list of all of Software AG's users would be too large a task for the users group itself.

Robert Galley feels there is no way Saggroup could operate without vendor involvement; the user base is not large enough, and there would not be enough financial backing. Galley, manager of systems support for Santa Fe Energy in Amarillo, Texas, serves as Saggroup's product representative for Software AG's Adabas data base management system. He coordinates the special interest group chairmen and tries to channel their needs and directives to Software AG through the executive committee.

Using Vendor Time, Resources

Saggroup, like other users groups affiliated with vendors, relies on a combination of the time and resources of the vendor itself and the executive committee members to handle administrative matters such as setting up meetings and distributing technical questionnaires.

The users group works with Software AG to determine the agenda for the annual conference. Because users felt that the seven concurrent ses-

sions held during last year's meeting in Las Vegas were excessive, the number of concurrent sessions was reduced to four this year.

The four sessions included a combination of user presentations, Software AG presentations and tutorials led by vendor representatives and intended as educational vehicles for the users.

The main focus of the users group has been to act as a vehicle for suggesting changes and enhancements, according to Bob Becker, data base/data communications administrator



Bob Becker



Jennifer C. Lee

Software AG Photos

for Foremost Insurance Co. of Grand Rapids, Mich., and currently technical support coordinator for Saggroup. One of the earliest users of

Adabas, Becker recalled the first conference he attended with about 25 other users. "Since 1973, the users

(Continued on Page 18)

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Users Group Role Requires Corporate Support

Being involved in a users group has its rewards, but it also requires a lot of time and effort as well as support from management.

While some companies may frown upon an employee's active role in a users group, The Aerospace Corp. of El Segundo, Calif., has encouraged its data base administration manager's participation in Software AG of North America, Inc.'s user group (Saggroup). Aerospace even paid last year for secretarial support for Jennifer C. Lee, current Saggroup president.

Despite her company's support for the active role she plays in Saggroup, Lee said that "your first loyalty has to be to the company that pays your salary. Somewhere along the line, your

time and energies become diluted. Something has to give."

Foremost Insurance Co. of Grand Rapids, Mich., has become accustomed to the involvement of Bob Becker, its data base/data communications administrator, since the firm was one of the first users of Software AG's Adabas data base management system. Becker's management feels that his participation in the users group is particularly beneficial in that it provides a means for the company to express its viewpoints directly to Software AG.

Robert Galley, manager of systems support for Santa Fe Energy in Amarillo, Texas, serves as Adabas product representative for Saggroup. "I think most management is aware of what

types of benefits involvement brings. In our case," he said, "it has helped provide exposure for my company and helped us develop contacts. We know who to call within Software AG and how to approach them."

The vice-president of Saggroup, G. Brett Aubrey, supervises data base services for Transcanada Pipelines in Calgary, Canada. Aubrey admitted that it is difficult for people to become heavily involved with a users group, particularly during tough economic times. However, he has not experienced problems; his firm recognizes that his users group involvement provides exposure in the DP field that he could not get at work and a broadened contact base.



Robert Galley

Software AG Photos



G. Brett Aubrey

"Hyatt was a pioneer of local area networks. When Datapoint introduced the first one, we ordered."

—Bob Regan
V.P. Management Information Systems
Hyatt Hotels Corporation



"Local area networks are the hot topic in data processing these days. But they're nothing new to us," says Hyatt's Bob Regan. "Ours have been up and running for five years."

When Datapoint introduced the first local area network, the ARC® system, in 1977, Hyatt was among the first to install it. Today there are approximately 5,000 ARC local area networks in use, far more than any competing system.

"One reason the ARC network has been so effective for Hyatt is because it's easy to expand," says Regan. "Hyatt has had phenomenal growth, and the ARC has kept up. When more people needed the system to do more work, we simply added to the network."

The ARC local area network can be expanded virtually without limit by simply plugging in additional Datapoint processors, printers, storage disks, and terminals. Each new processor adds power to the

network so new users get the same fast response the original users were getting. Companies can closely match the power of an ARC system to their needs, expanding in small, inexpensive increments instead of buying "more computer than they need" in order to have room for growth.

What's more, Datapoint systems can be expanded or upgraded without replacing software. "We run some programs on ARC networks that were originally written for our first Datapoint computer more than ten years ago," says Regan. "That means we didn't lose any of the money we invested in programming and training. And it made the growth steps easy on our people. The changeover to the ARC network was accomplished in only two days."

No matter how far an ARC system is expanded, all the users can have access to all the data except where security precautions are installed. So even though more and more people are using more and more computers, there's never

need to duplicate files.

"At present, Hyatt operates forty five ARC systems," Regan says. "Others are in the planning stages right now. On the operation side we use them for accounting, reservations, and group sales. At Corporate we use them for accounting and for systems development. Obviously, we depend on them heavily. They're like the money where we check our own financial performance. They simply keep on work. And they do."

"Hyatt has stayed with the ARC system because it's a cost-effective. That's the bottom line. I can recommend a certain system to a hotel, but in the end, that member has to sell itself. And keep selling itself after it's installed. Our Datapoint ARC systems have done that."

For more about Datapoint, call (800) 331-5679. In Texas, call (800) 292-7899. Telet 367300 in the U.S., 098422 in Canada; or 023493 in Europe (UK). Or write Datapoint Corporation, Marketing Communications, T41CW, 9755 Datapoint Drive, San Antonio, Texas 78249.



DATAPOINT

Saggroup Toys With Separation

(Continued from Page 15)

group has wanted to assert a voice in the direction of [its] products," he said.

The executive committee, which consists of three officers, three product representatives, several standing committees and a users group liaison, meets with Software AG twice a year. In between, there are "a lot of phone conversations and committee meetings," Becker explained. A recent effort to amend the Saggroup constitution was handled largely over the telephone, and the same is true for ongoing technical support.

Reason for Close Ties

Becker attributes the close ties between the executive committee and Software AG to the personal style of John Norris Maguire, the vendor's chairman of the board. "He has an attitude of being a very responsive person to his clients, and he has directed that into his organization over the past 10 years," Becker said.

Lee's perception is that the most valuable concept of users groups is the contacts they can make. For this reason, the executive committee set up a room with a bulletin board on which people could leave notes asking for the names of others with similar interests or problems.

Becker noted that the contacts with Software AG people are another benefit of involvement with the users group. "When I develop a rapport and a personal relationship, my service level will improve," Becker said.

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Details History of Use at His Firm

Ford Exec Sees Micros Taking 'Center Stage'

By Bob Johnson

CW New York Bureau

NEW YORK — "The consensus on the microcomputer in large organizations is changing — it is becoming the centerpiece of productivity."

That was how Mayford Roark, executive director of systems for Ford Motor Co., kicked off a talk on "Increas-

ing Corporate Productivity via the Personal Computer" at the recent Executive Microcomputer Conference and Exposition here.

Tracing the microcomputer through Ford's DP history to illustrate how its inception increased the company's productivity, Roark recalled that Ford's first experience with personal computers came through employees hobbyists.

"We discovered from these hobbyists in the spring of 1981 that there were about 100 microcomputers in use at the company, and users were claiming that they actually increased their overall productivity," he explained.

At that time Ford had 8-bit Radio Shack TRS-80 Model II computers in its domestic operations and Apple Computer, Inc. Apple IIs overseas. The company was so pleased with the small machines' performance, especially their productivity benefits, that it decided in 1982 to purchase 500 additional microcomputers.

With the advent of the 16-bit machine, Ford seized the opportunity to boost its productivity level even more, according to Roark. Ford selected the Victor Business Products, Inc. Victor 9000, and over the first five months of implementation, purchased more than 500 of the machines as well as another 100 to give to employees for home use.

"All of the 16-bit machines we looked at were very good," Roark said. "We chose the Victor series for a

number of reasons, including price and support. Our main concern, however, was getting a microcomputer with mainframe [Microsoft, Inc.] MS-DOS data base communications capabilities, which the Victor had."

Ford is also a user of Digital Equipment Corp. Rainbow 100 computers for its national network of car dealers. It plans to install "several thousand" of these systems bundled with packaged software, Roark said.

The current tally of microcomputers at Ford is nearly 1,000, according to Roark. He maintained that the company is using them in many application areas with a variety of software in an effort to boost productivity. Ford is now using mostly spreadsheet-type packages such as Visicorp's Visicalc and Sorcim Corp.'s Supercalc.

One of Ford's more creative applications for the microcomputers is in its heavy truck pricing area, Roark noted. Because this application was such a "data base monster," with heavy volume and installation rates, Ford turned to the microcomputer for more user flexibility. "This was not a new application for us, but the microcomputer allowed us to share data sets across the country," he observed.

Another application in the heavy truck area is testing. Ford engineers use portable computers to enter test data that is later sent to the mainframe.

Microcomputers often allow applications normally

very low on the mainframe priority scale to be tested and processed in much shorter time periods, Roark said, adding that "the potential for application productivity is unlimited."

Roark also pointed out that many small applications can easily be performed by users without DP expertise. He said that this raises the productivity of the mainframe DP department because it frees it from a number of small operations.

"Most small applications would never be maintained responsibly by the systems organization anyway," he added. "They're too busy

with large, complex data base and communications jobs."

The relationship between the personal computer and corporate computing in terms of productivity is analogous to federal government vs. state government, Roark said. The corporate computing department makes the DP decisions and maintains corporate information, but the smaller users keep their own personal data. This arrangement, Roark said, often allows for more specific and more accurate data being kept by the user departments and ultimately translates into better productivity.

McCormack & Dodge Users To Hold Meet Aug. 21-24

NEEDHAM HEIGHTS, Mass. — McCormack & Dodge Corp. will hold its sixth annual users conference at the San Francisco Hilton on Aug. 21-24. The keynote speaker will be Dr. Alan Greenspan, chairman of former President Gerald Ford's council of economic advisers. Greenspan currently is chairman and president of Townsend-Greenspan & Co., an economic consulting firm.

A featured speaker on the second day of the conference will be baseball great Willie Mays.

Highlighting the conference will be the introduction of McCormack & Dodge's de-

velopment technology and product-user exchange sessions for different industries and hardware environments.

John B. Landry, McCormack & Dodge's senior vice-president of research and development, will address the conference on new directions and trends in applications software.

Attendee registration fees, which include product sessions, conference materials, breakfasts, luncheons and receptions are \$495 for those who register before July 29 and \$545 thereafter.

More information is available from McCormack & Dodge, 1225 Worcester Road, Natick, Mass. 01760.

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Calendar

Week of July 17

July 18-20, St. Louis — **Systems Analysis and Design: Concepts and Effective Practice.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

July 18-20, New York — **Computer Operation: Effective Production Schedule and Control.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

July 18-20, Summit, N.J. — **IMS DL/1.** Contact: Chubb Advanced Training Center, 480 Morris Ave., Summit, N.J. 07901.

July 18-20, Washington, D.C. — **Data Communications: An Introduction to Concepts and Systems.** Contact: Datapro Research Corp.,

1805 Underwood Blvd., Delran, N.J. 08075.

July 18-20, New York — **Programming in Basic.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

July 18-20, St. Louis — **The Personal Computer: Strategies for Managing.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

July 18-20, Washington, D.C. — **Data Base Management Systems: A Comparative Analysis of General Purpose Systems.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

July 18-20, Atlanta — **Evaluating, Selecting and Using Computer Software Packages.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

July 18-20, Washington, D.C. — **Introduction to Office Automation: Concepts, Techniques and Applications.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

July 18-20, San Francisco — **Computer Operation Management: Effective Techniques.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

July 18-20, San Francisco — **Data Communications for Microcomputers.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held in Atlanta on July 18-20.

July 18-21, Chicago — **CICS/VS Macro-Level Applications Programming.** Contact: Rosa DiSanto, Comped Technical Corp., 1133 Ave. of the Americas, New York, N.Y. 10036.

July 18-21, Los Angeles — **Vsam: Its Structure and How To Use It.** Contact: Dianne Halper, On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

July 18-21, Denver — **Project Management.** Contact: Brandon Systems Institute, 4720 Montgomery Lane, Bethesda, Md. 20814.

July 18-22, Boston — **Structured Analysis & System Specification Workshop.** Contact: Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

July 18-22, Cleveland — **Structured Analysis & Design Workshop.** Contact: Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036. Also being held in Kansas City and Nashville, Tenn., on July 18-22.

July 18-22, New York — **CICS/VS Application System Design.** Contact: Rosa DiSanto, Comped Technical Corp., 1133 Ave. of the Americas, New York, N.Y. 10036.

July 18-22, Richmond, Va. — **Structured Systems Design/Structured Program Design Combined Courses.** Contact: Georganna Carson, Ken Orr and Associates, Inc., 1725 Gage Blvd., Topeka, Kan. 66604.

July 18-22, Portland, Ore. — **Structured Design Workshop.** Contact: Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

July 18-22, Philadelphia — **Vsam File Management & Programming.** Contact: Rosa DiSanto, Comped Technical Corp., 1133 Ave. of the

Americas, New York, N.Y. 10036.

July 18-22, Long Beach, Calif. — **Structured Design & Programming Workshop.** Contact: Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036. Also being held in Boston on July 18-22.

July 18-22, Birmingham, Ala. — **Structured Design for Real-Time Systems.** Contact: Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

July 18-22, Houston — **Structured Programming Workshop.** Contact: Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

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July 18-22, Salt Lake City, Utah — **Information Modeling Workshop.** Contact: Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

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July 18-22, Atlanta — **Project Planning & Control Workshop.** Contact: Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

July 18-22, Boston — **Financial Modeling: A Structured Approach.** Contact: Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

July 19-21, San Francisco — **DP for Senior Executives.** Contact: Peat, Marwick, Mitchell & Co., 810 Seventh Ave, New York, N.Y. 10019.

July 19-21, New York — **Basic System Analysis.** Contact: Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

July 19-21, New York — **The Personal Computer in the Corporate Environment.** Contact: Women in Data Processing, Inc., Suite 2008, 310 Madison Ave., New York, N.Y. 10017.

July 19-21, Hartford, Conn. — **DL/1 Application Programming Workshop.** Contact: New England Data Services, P.O. Box 92, Guilford, Conn. 06437.

July 19-22, Cary, N.C. — **Introduction to Data Processing Using SAS Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

July 20, Dallas — **Computer Consulting: Tools, Techniques and Methodologies.** Contact: Laura Reed, Laura Reed CSS, Inc., 6730 L.B.J. Freeway, Dallas, Texas 75240.

July 20-21, Washington, D.C. — **The Token-Based Local Networks Forum: The Architecture Technology Forum Series.** Contact: Architecture Technology Corp., P.O. Box 24344, Minneapolis, Minn. 55424.

July 20-21, New York — **Systematic Software Testing.** Contact: Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

July 20-22, Atlanta — **Word Processing Systems: Planning, Design and Operation.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

July 20-22, New York — **SAS Processing Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

July 20-22, Boston — **Data Communications.** Contact: The American Institute for Professional Education, Carnegie Bldg., 100 Kings Road, Madison, N.J. 07940.

July 20-22, New Haven, Conn. — **Structured Cobol Programming.** Contact: New England Data Services, P.O. Box 92, Guilford, Conn. 06437.

July 20-22, Chicago — **SAS Basics Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

July 21, Nashua, N.H. — **Microcomputer System Evaluation — A Crash Course.** Contact: Seminar Administrator, New Hampshire College, Resource Center, 2500 N. River Road, Manchester, N.H. 03104.

July 21-22, Frederick, Md. — **How to Use a Personal Business Computer.** Contact: Center for Management Development, College of Business and Management, University of Maryland, College Park, Md. 20742.

July 21-22, Washington, D.C. — **Data Communications: Advanced Concepts, Products and Services.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

July 21-22, Los Angeles — **Computer Networks: Protocols, Standards and Compatibility.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

July 22, Nashua, N.H. — **Business Graphics: How to Improve Presentations and Reports Using Micro Graphics.** Contact: Seminar Administrator, New Hampshire College, Resource Center, 2500 N. River Road, Manchester, N.H. 03104.

Week of July 24

July 24-26, Monterey Bay, Calif. — **Optical and Video Disk Systems.** Contact: Institute for Graphic Communication, 375 Commonwealth Ave., Boston, Mass. 02115.

July 25, New York — **CICS/VS Application Programming Macro Level.** Contact: Dianne Halper, On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

July 25-26, Summit, N.J. — **IMS Data Communications.** Contact: Chubb Advanced Training Center, 480 Morris Ave., Summit, N.J. 07901.

July 25-26, San Francisco — **Automatic Transfer Money/Electronic Funds Transfer.** Contact: Executive Enterprises, Inc., 33 W. 60 St., New York, N.Y. 10023.

July 25-26, Chicago — **IBM's Systems Network Architecture: A Master Plan for Teleprocessing.** Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

July 25-27, New York — **The Personal Computer in the Corporate Environment.** Contact: Women in Data Processing, Inc., Suite 2008, 310 Madison Ave., New York, N.Y. 10017.

July 25-27, Boston — **Programming in Basic.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

July 25-27, San Francisco — **Improving Office Productivity: Principles**
(Continued on Page 22)

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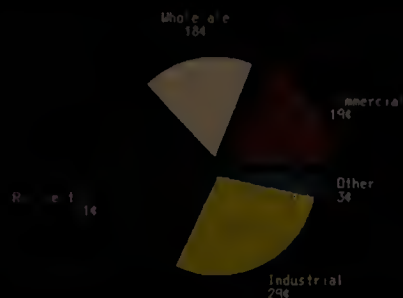


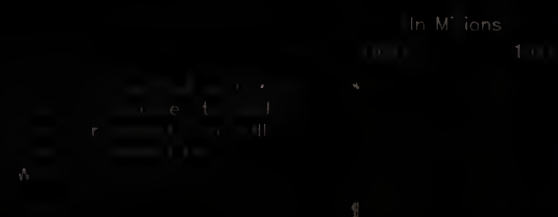
Chart of Revenue

Kajima Corporation



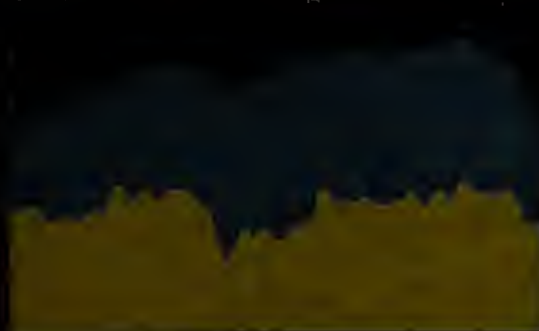
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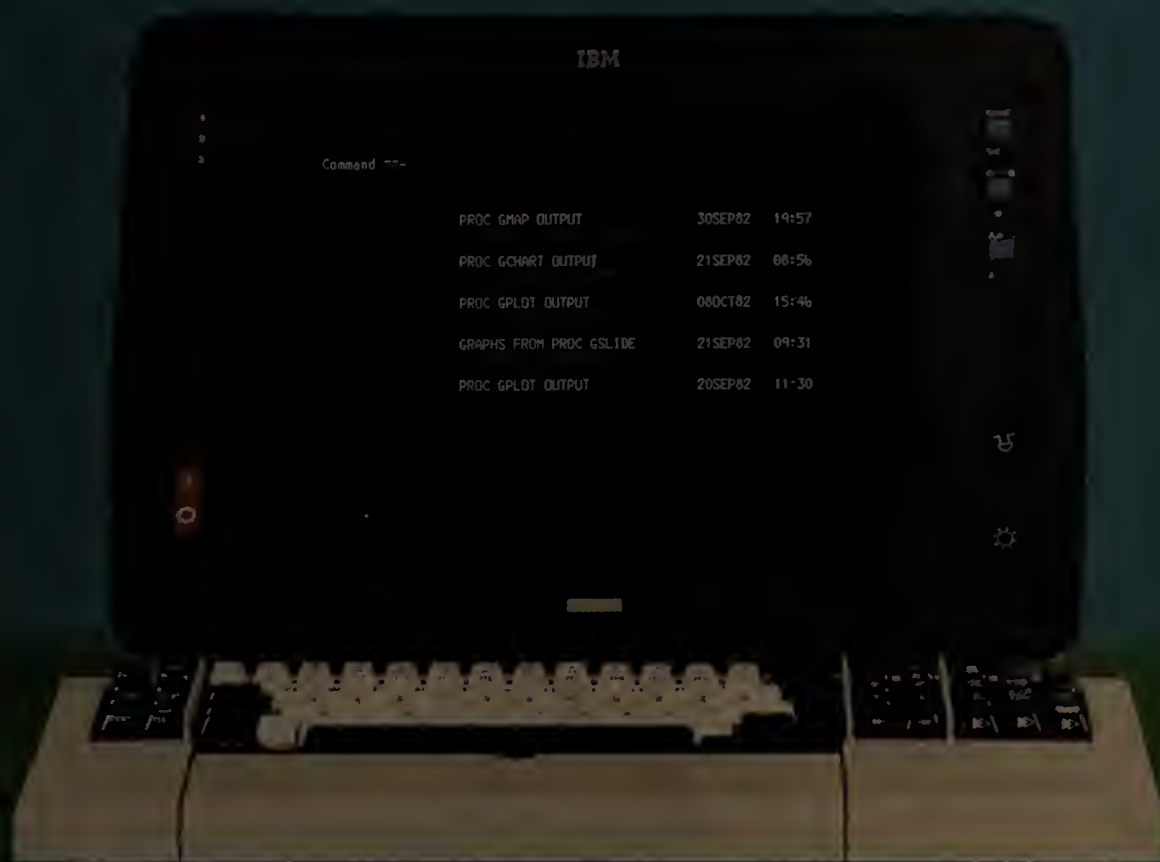
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Calendar

(Continued from Page 20)
ples and Practices. Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

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July 25-27, Washington, D.C. — **Computer Memory Systems.** Contact: The George Washington University, Continuing Engineering Education, Washington, D.C. 20052.

July 25-27, Seattle — **Structured Analysis for Users.** Contact: Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

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July 25-29, Summit, N.J. — **CICS Command Level Programming.** Contact: Chubb Advanced Training Center, 480 Morris Ave., Summit, N.J. 07901.

July 25-29, New York — **Infos II Data Structures Under AOS.** Contact: Data General Corp., Corporate Educational Services, 4400 Computer Drive, Westboro, Mass. 01580.

July 25-29, Annapolis, Md. — **How to Establish a Successful DP User Coordination Function.** Contact: Keston Associates, 11317 Old Club Road, Rockville, Md. 20852.



Scottish University Increasing Strides in AI

By Bob Johnson

CW New York Bureau

EDINBURGH, Scotland — Known for its work in artificial intelligence (AI) since 1966, the University of Edinburgh's Department of Artificial Intelligence is positioning itself to increase its knowledge of the subject and, more importantly, to apply its AI achievements in order to advance information technology as a whole

in Scotland.

A preliminary draft outlining the AI department's plans was recently released. In it, the university pointed out that the AI department, which is traditionally grouped with the cognitive sciences such as linguistics, philosophy and psychology, is now attempting to broaden its discipline and work with the university's computer science and engineer-

ing departments.

Together, these three departments will form the basis of Edinburgh University's School of Information Technology, which will offer students a master of science degree.

In addition, commercial relationships with UK industries are progressing, as well as a number of development contracts. The AI department recently received funding

for a teaching post from Systems Designers Ltd., a British software house.

The school pointed out, however, that there is a natural limit to the extent to which a university department can provide service to industry. Consequently, a proposal has been put forward to create an Artificial Intelligence Applications Institute.

According to the proposal,

the AI institute would operate as a for-profit laboratory. It would be modeled after organizations like the Stanford Research Institute and Bolt Beranek and Newman, Inc., according to the school.

Languages and Systems

The University of Edinburgh gained its reputation in AI as a result of contributions to AI languages and systems. It has developed programming languages such as POP-2 and has nurtured Prolog into a practical programming tool for AI. The AI department has supplied implementations of AI languages to over 200 laboratories around the world, and it is bent on continuing its research for both academic and commercial applications.

The current developments in languages are being undertaken by a group funded by the UK's Science and Engineering Research Council (Serc). The group's concern is to provide language support for AI research nationwide in Scotland and to develop AI software for the single-user ICL Ltd. Perq machine.

"The major goal of this project is to provide the superior symbolic programming capability of Prolog in a user environment of the quality to be found in modern personal computers with improved interactive capabilities," a university spokesman explained.

AI and its relationship with robotics is another field of activity for the university. Because of its past interest in robotics, particularly the potential usefulness of fast-moving robots for assembly, the AI department has undertaken a study of their dynamic behavior, design and control. Research in this area is being funded by Serc and is being conducted by a group called the Robot Language Working Party, headed by Robin Popplestone, one of POP-2's developers.

Right now, a robot command language called Rapt is under development which, according to the AI department, is intended to make it easy for people who are computer experts to program an assembly robot.

"The idea is that the assembly task should be programmed in terms of the job that is to be done and how the objects are to be fitted together, rather than in terms of how the manipulator should be moved," the school said.

The school's AI people claim an intelligent robot needs an accurate representation of its world internally that allows it to predict the results of planned actions.

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TeleVideo Systems, Inc.

EDITORIAL

Your Unacceptable Alternative

The job of planning and buying corporate computer resources may be slipping from the hands of the DP department and falling into the laps of top executives.

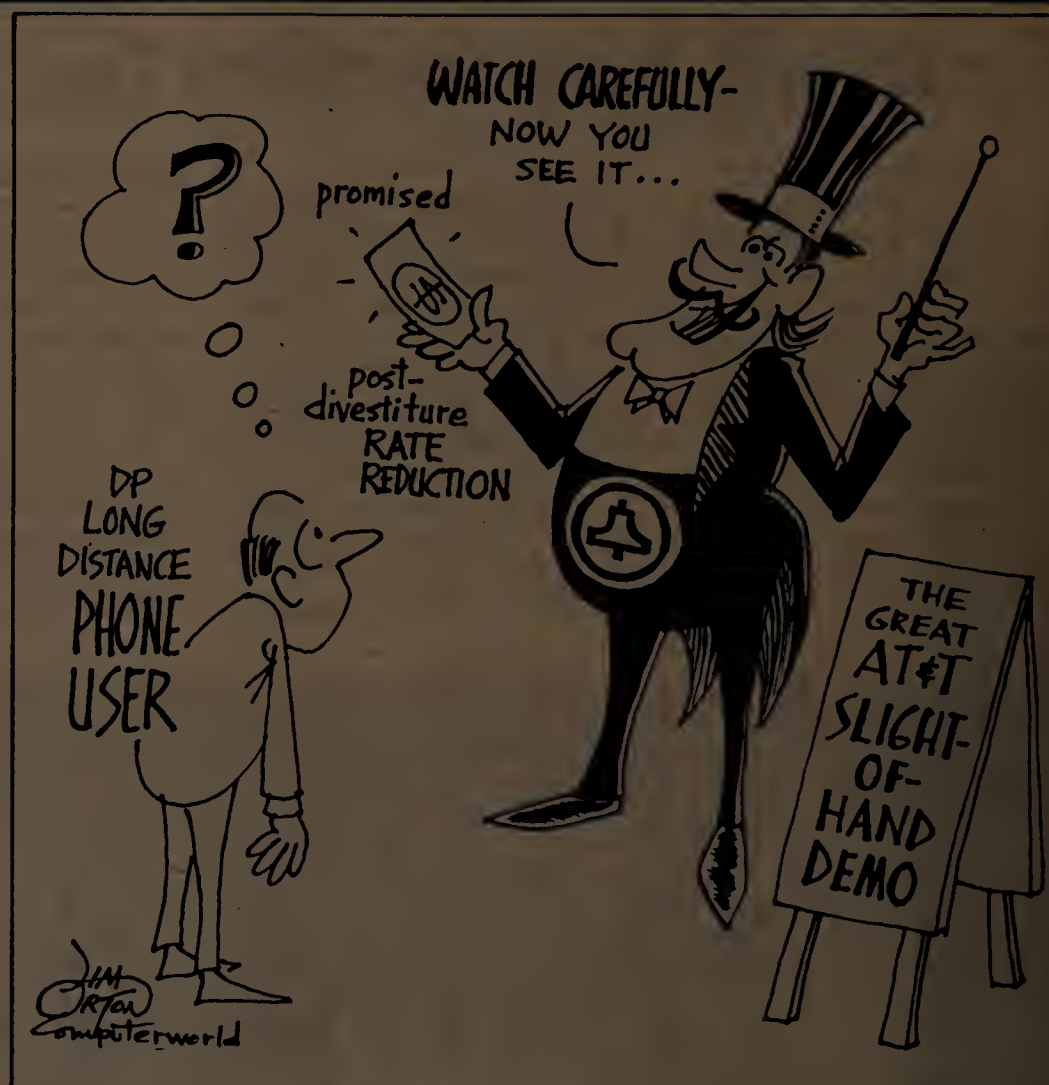
Many companies are beginning to view computer hardware more as a commodity than a business tool — and with good reason. Expensive computer systems sometimes have almost no resale value a few years after they are purchased; they have been made obsolete by newer, faster and more efficient machines. And many companies' needs change so fast that computer systems can become outdated in less than five years. In both cases, the result translates into big losses for companies.

In addition, hardware acquisition has become an almost impossibly complex task. The question of whether to buy, rent or lease hardware has always been a difficult one. Today, however, the numerous purchase, rental and lease agreements — complicated by the deals offered by plug-compatible and third-party vendors — make the average DP manager's head spin. As one DP manager recently told *Computerworld*, "It's hard to keep track of who's on first" [CW, June 27]. Processor deals that five years ago could be handled by the DP department now require a team of financial and legal experts. Many larger companies have developed specialized groups within the DP department to analyze acquisition deals; smaller companies rely on financial experts within the firm and hope they know enough about computers to be of some assistance.

Capacity planning is also becoming more difficult. A majority of DP executives recently surveyed by *Computerworld* found they required a larger processor a lot sooner than they expected (story in this issue). In fact, several said their capacity planning efforts were reliable for only one or two years. The reason: almost uncontrollable demand for computing power by end-user departments accompanied by rapid-fire advancements in hardware technology.

The increasing complexities in the purchase and planning of computing power offer new opportunities for DP management to increase its visibility and to strengthen its position at the highest levels of the corporation. Capitalizing on these opportunities, however, will require DP managers to upgrade their business, legal, financial and interdepartmental skills.

The alternative is to be left behind in the computer room — an alternative that must be considered unacceptable both to DP managers and to their corporations.



LETTERS

Set Operations Needed

It was most distressing to learn from Vincent C. Rauzino's In Depth article, "The Present and Possible Future Data Base Machines" [CW, June 6], about the apparent direction being taken by all current data base machine manufacturers. They all seem to have decided that the relational approach is the wave of the future and that building a machine that is solely devoted to supporting that data model is the way to go.

While this may be true for moderate-size data base applications, these manufacturers have fallen into the same trap the developers of hierarchical and network models found — namely, that the logical view of the data has a direct physical analog in the storage structure. The hierarchies and the networks have embedded pointers that physically map into the links between entities, and the relational model has the data stored like the logical tables.

A good portion of the DP world naturally maps into hierarchies or networks, while other portions have the natural look of tables (or some other structure). Typically, more than one data model can be used, and the choice should be up to the user.

With all current implementations, if your data model does not match the storage structure, it is very difficult and inefficient to support the application, even if you have special-purpose hardware. What is needed is a collection of operations that relaxes system dependence on a specific structural choice.

This body of operations over multiple structure types is provided by extended set theory, as developed by D.L. Childs of Set Theoretic Information Systems, which is located in Ann Arbor, Mich. Extended set theory underlies all logical and physical views of data available from any of the current data base management

systems (DBMS).

This means that all DBMS operations currently being performed can be expressed in terms of set operations no matter what data model is being used. One of the unique aspects of the relational data model is that the operations available were defined at the same time the structure was presented. Extended set theory provides an enriched collection of operations that allow all the data models to be represented not just singly; multiple views of the same data can be supported. That is what data structure independence is all about — separating the logical and structural representations.

The well-defined mathematical basis for set theory gives the DBMS designer and implementor the tools necessary to build effective and efficient systems. There is nothing magical about set theory that will force an optimal design, but it does provide the tools for quantifying the effect of design choices, especially as the associative, commutative and distributive properties of set operations are put to intelligent use.

Needless to say, I strongly believe that the future of data base machines should lie in the development of devices that support set operations and perform intelligent storage management based on the principles of set theory.

Clifford R. Kuhl

Vector Research, Inc.
Ann Arbor, Mich.

DATA PAST

Five Years Ago July 3, 1978

WASHINGTON, D.C. — The DP job outlook for new college graduates was considered excellent, according to a U.S. Department of Labor bulletin that listed large numbers of job openings entered by employers at the 2,500 Job Service offices in the U.S.

Ten Years Ago July 4, 1973

WASHINGTON, D.C. — Clarence M. Kelley, one of the nation's foremost promoters of computerized law enforcement, was confirmed by the Senate as the director of the Federal Bureau of Investigation.

Kelley allotted 5% of the police budget to DP.

ATLANTA — Cobol, additional distributed data processing capabilities and a doubled main memory capacity became available to Series/1 users following an IBM announcement of 12 upgrades to that system.

CINCINNATI — An appellate court here, in upholding a lower court ruling, ordered a Toledo, Ohio, gas company to enforce a personal notification system and rely less on its computer in its billing practices.

Computerworld welcomes comments from its readers. Preference will be given to typed, double-spaced letters of 150 words or less. Letters may be edited for purposes of brevity and clarity. Letters should be addressed to Editor, *Computerworld*, 375 Cochituate Road, P.O. Box 880, Framingham, Mass. 01701.

SOFTLINE/Werner L. Frank†

Why Have a Micro-Mainframe Connection?

This is the year for the microcomputer to meet the mainframe. Announcements of this event are in abundance as both hardware and software vendors seek to exploit the new market opportunity that the personal computer makes available. This interest is furthered by the perplexity found in the management information systems departments of larger organizations, where the proliferation of the microcomputer is challenging the long-standing dominance of centralized computing.

How do the large central files and associated applications of host computers, geared for terminal access, become useful to hundreds of users armed with personal computers? And how can the rich, new body of software developed for the microcomputer, inherently more user-friendly and functionally responsive, become a computing adjunct to the powerful software associated with mainframes? How do these two technologies, in seeming opposition, learn to coexist and reinforce each other?

Some possible reasons for having a micro-mainframe connection, as well as the different levels of sophistication facilitating the union, will be explored here.

What could be the rationale for furthering communications between an intelligent device, such as a microcomputer, and a more powerful, often remote computer, be it mini or mainframe in size? There are basically three reasons for such a lash-up. The first relates to making the micro behave from time to time like a terminal connected to a host computer. The second is transferring files of information between the micro and the mainframe. The third concerns the opportunity of creating a distributed

This is the first of a two-part series on "The Microcomputer Meets the Mainframe."

DP environment.

With respect to the option of turning a personal computer into a terminal connected to a host computer, it may be desirable to take on the role of an IBM 3270-type device when connecting to an IBM mainframe — or as a VT100 when connected to Digital Equipment Corp.'s VAX-11. In such modes of operation, the personal computer is emulating the physical characteristics of a target terminal that may be the normal, or native, device typically associated with a specific computer executing a specific mainframe-based application.

In addition to the apparent physical attributes of the native terminal as perceived by the human operator, it is also necessary to replicate the communications and message protocols required in that native mode of operation. Thus, there may be a requirement for asynchronous or synchronous communications, just as there may be special formats required by the host computer and its software operating environment. In this special role, it can be said that the microcomputer has adopted the personality and the behavior of a specific terminal in order to execute an application that is already resident on the connected host computer.

Three requirements must be met to accomplish the objective of emulating a terminal by an intelligent device such as the microcomputer:

- **Hardware.** An appropriate hardware model is introduced, typically a

specially built circuit board, to provide the proper physical features associated with the communications protocol. This board is inserted into an available slot in the chassis of the microcomputer housing unit. Alternatively, it is possible to achieve similar results by introducing a protocol converter, a second computer interfacing the natural communications discipline of the desktop computer with the protocol operating in conjunction with the mainframe. The protocol converter will perform the necessary conversion from one communications mode to the second.

- **Software.** A computer program is prepared for the micro that, upon execution under the aegis of the adopted operating system, will both accept the data to be transmitted to the host by properly packaging it in the format expected by that host when in the sending mode and unpack messages from the host for local presentation when in the receiving mode.

- **Systems.** There must be appropriate assignment of keyboard and display features in order to simulate the physical aspects of the copied terminal. This is a mix of software and documentation, the latter giving usage and mapping instructions to the operator regarding the physical requirements of one device emulating another.

In this terminal mode of operation, the micro-mainframe connection has not really added anything to the computing environment other than making use of a personal computer in the role of a rather dumb terminal. In fact, when the session is over, nothing more or less has been accomplished than the exercising of an application resident on a host.

So why would one be interested in such a lash-up? There are three rea-

sons for this approach:

- **Economical Operation.** In the event a user has need for accessing a host system at all, and also wishes to enjoy personal computing facilities, then employing one set of hardware is obviously the most economical alternative. The marketplace is recognizing this benefit, and we are witnessing the movement of terminals being transformed into personal computers and vice versa.

The simplest example is the dual operation possible with the IBM Personal Computer, which can function in its natural desktop mode, as well as perform as a remotely connectable terminal in the presence of an asynchronous or bisynchronous circuit board coupled to a communications modem.

An even more elegant configuration is now possible that readily adapts to the already in-place clustered terminal systems. This is the IBM offering of a connection from the 3278 terminal to the Personal Computer CPU. This provides, upon keyboard selection, either a 3270 model of operation or a free-standing Personal Computer performance.

Several companies have recognized the sitting duck aspect of all of the 3270 systems installed throughout the larger computer user base and, accordingly, are now offering an obvious alternative. They make available off-the-shelf circuit boards and software that transforms the Personal Computer, via the coaxial cable connected to the 3274/3276 controller, into the 3278, and sometimes 3279, terminal device.

Examples of such vendors are Technical Analysis Corp. of Atlanta, which offers Irma, and Forte Data Systems, Inc. of Santa Clara, Calif.,
(Continued on Page 26)

HUMAN CONNECTION/Jack Stone†

Micros Need Same Systems Planning as CPUs

Strong words these, but Richard Anthony, general manager and chief executive officer of Norstar Communications, part of the Broadmoor Group of St. Louis, was quoted as saying, in effect, that improper business use of micros could lead to company crises [CW, June 27]. His explanation of this follows.

"The first crisis to be met is that of data processing expertise. There is a conspicuous lack of adequate implementation and support assistance provided by microcomputer vendors. In small firms, where micros will function independently with a limited number of different applications, the crisis is principally associated with implementation or expansion. These firms may be able to find competent outside assistance that will allow them to tough it out until expertise in the machine and applications is gained.

"In larger firms, microcomputers are likely to find applications in a number of diverse situations. Cost and performance will dictate the

This is the last in a three-part series on "The Coming Crisis in Business Microcomputers."

consideration of networking and communications. As the use of microcomputers increases, requests for assistance with inevitable problems and requests to access central data bases will put important demands on DP staffs not currently equipped to handle them. The absence of expertise will undoubtedly lead to communications problems between DP and users, as well as to requests for DP staffing in user departments.

"The second crisis is that of data security and information integrity. In small firms, implementation of an automated system often occurs without adequate regard for manual data handling procedures, file security and monitoring information integrity.

"In large firms, the potential for the proliferation of data bases that

are controlled and maintained by groups outside of the computer center raises the same concern for standards for data handling and accuracy of the information upon which reports and analyses emanating from these groups are based. Communications and networking adds additional risks to data base security.

"A third crisis is that of technology. The rapid changes in computer hardware with the attendant media coverage has caused a stampede of gadget enthusiasts who will gobble up every add-on the vendors can sell.

Crisis of Organization

"Finally, there is the crisis of organization," he said. "In small firms, the conflict will be interpersonal as new expertise will yield new responsibilities and power. In large firms, the conflict will be general and interdepartmental.

"The crises of expertise and informational integrity, as symbolized by the pocket calculator vs. computer system, will militate toward stan-

dardization and coordination, as well as the acquisition of the expertise required to support microcomputers.

"The need to assess responsibility for data security, support and planning will precipitate organizational changes.

"Only relatively few — some estimate 10 to 40 — of the Fortune 1000 companies have begun large-scale planning and implementation of the office of the future, which integrates all aspects of communications and information processing. Those firms that have undertaken such an endeavor have found that the creation of an interdisciplinary task force is most appropriate.

"The amount of time and effort that a firm will need to devote to the care and feeding of microcomputers will depend upon its size and the homogeneity of its operations. Success will depend upon how well business will perceive the operating requirements of the microcomputer and adapt organizations and expectations to these requirements."

Exploring Micro-Mainframe Connections

(Continued from Page 25)

with the Pcox interface. In all these cases, the Personal Computer can emulate a 3278. But most important, the existing 3270 communications network to the mainframe remains intact and operative. In fact, the approach works whether the terminal controller is directly channel attached or remotely connected to a 3705 communications front end or whether it is operated in IBM's Binary Synchronous Communications mode or IBM's Systems Network Architecture/Synchronous Data Link Control protocol.

• **Gateway Access.** There may be a need for the user to access a number of host systems via a variety of communications protocols. From time to

time, the same individual or the same device may require connection to the corporate mainframe, which may be an IBM application or 3101 asynchronous operation for a second situation. On another occasion, this user may have a desire to connect to a dedicated Hewlett-Packard Co. HP 3000 computer, which serves his department's needs for order entry and inventory control. Subsequently, the same user may wish to sign into a DEC VAX-11 system or to a commercial time-sharing vendor.

Finally, there will be circumstances in which connections to publicly available data bases become of interest. For all these cases, the intelligent terminal or personal computer is the rational way to achieve a gen-

eral gateway, or access method, to varying computer makes and applications, each having its own line and message disciplines. This flexibility may also be related to mobility. The access may be sought from different terminal devices, most often from the office, but also from the home and sometimes in the midst of travel.

• **Footprint Problem.** There may be a space limitation on a desk so that there is only room for one device that can handle both the terminal and the personal computing needs of the individual. However, space may not be the only consideration. There is also the benefit of rationalizing the cables, the modems and the local storage devices, which comes about from dealing with one integrating

set of hardware.

The terminal-oriented communications schemes identified above are readily embellished to include more features than simply linking the micro to a second computer. The most popular additive is the provision for capturing the data presented on the face of the video and retaining it for local disk storage. A sophistication beyond such a simple screen dump is the ability to do some logical selection from the video presentation. These features are natural steps to the second aspiration of linking micros to mainframes, for example, file transfer.

File transfer between micro and mainframe can be a simple task and fall out from the terminal connection methodology described up to this time or it can be a complex process involving special data extraction programs operating at both ends of the two-computer connection. The technology for file transfer has actually been evolving amidst the microcomputer community for a number of years and has reached a rather sophisticated level, at least as far as asynchronous communications operating with the RS-232C interface and standard modems is concerned.

The interest in file transfer among microcomputer enthusiasts has been motivated by the desire to move microcomputer programs from one system to another and overcome, via direct communications, the overwhelming barrier that varying CPUs and incompatible disk devices and formats presents to two users. Dozens of commercially available programs now provide quite flexible means for attaching two computers and driving the transmission process through well-conceived menus and selection criteria that govern such parameters as:

- Type of file — Ascii, binary or program.
- Line rate — typically 300 or 1,200 bit/sec.
- Line type — full duplex or half duplex.
- Delay times — time-outs and so on.
- Special characters — transfer controls, end of line and so on.
- Parity type — odd and even.
- Modem type.

The dial-up, sign-in and transfer process can often be handled in an automatic manner through prestored equivalents of executive programs. In addition to being able to select the appropriate communications environment, these programs also provide error-detection and correction schemes, depending upon the nature of the transmission procedure. Examples of general-purpose software supporting such capability are Move-It of Woolf Software Systems of Canoga Park, Calif., Ascocom of Dynamic Microprocessor Associates of New York and Smartcom II from Hayes Microcomputer Products of Norcross, Ga.

This technology has now been recognized for adaption to the micro-mainframe environment. Here the motivation primarily comes from recognizing the existence of lots of data at the mainframe and the desire to download files for subsequent use

(Continued on Page 28)

The Economics of Office Automation

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READER COMMENTARY/Jerry Sitner†

Coding Clarity the Key to Productivity

Data processing will continue to fail in its quest to measure programming productivity for the same reason it has failed to solve the overburdening program maintenance cost problem. All data processing has accomplished to date is to recognize, by trial and error, that which is not the basis for programming productivity measurement.

We in DP are beginning to accept correctly that lines of code do not measure productivity. What contribution to productivity is made if a programmer produces twice as much code as others and then takes four times longer to test, debug or modify

that coding.

We also are starting to realize that number of programs completed, without taking into account size and degree of difficulty, is not a measure of productivity.

What then should be the measure of productivity? The only valid measure of programming productivity is source coding clarity.

Readability and understandability of the methodology being used to implement each program function are the basis of productivity in both new program development and maintenance. The more understandable coding is, the less time it will

take to test, debug or modify it.

This is not only the case with placing the initial program into production. Over any program's life cycle, numerous modifications can be expected. Until DP can accept this, the program productivity problem will not be solved.

The creators of Cobol, nearly 25 years ago, clearly recognized this. At that time, the brains of the most prestigious computer companies and users met to develop a common computer language that would be compatible with all hardware.

The consensus from those meetings was that the No. 1 objective for

this proposed common language (it had not been given the name "Cobol" as yet) was readability.

These giants of DP were keenly aware of program productivity and maintenance costs even then. They knew the devastating effect of non-clarity programs on DP budgets. In all their wisdom, they came up with Cobol, which was designed specifically to solve productivity problems.

For reasons such as hardware memory limitations, excessive CPU time and so on, which were not what the creators of Cobol had in mind, DP chose to replace ease of reading with ease of writing as its No. 1 objective. We know now that these reasons are not valid. This shift of objectives was accomplished by encouraging speed writing in place of the intelligent use of English. Speed writing produces 'broken' Cobol coding. 'Broken' Cobol, like 'broken' English, is difficult to understand.

This approach ultimately eliminated ease of reading from any list of priorities. I am sure you have seen programs held from production because the documentation folder was not completed; but have you ever heard of a program being rejected because the source coding was unclear?

The result of all this was to deal DP the most crippling blow: It has cost business billions of dollars.

Although the committee members knew full well the memory limitations at the time, which were much more severe then at present, they still insisted that the most important objective was ease of reading: Witness the allowed 30 positions for data and paragraph names.

If DP is to have any chance of dramatically improving programming productivity, it must judge productivity, using the only valid measurement available, namely, clarity of coding. Our Cobol forefathers tried to tell us this 25 years ago.

Sitner is president of Sitnerology Co. in New York.

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Micro Meets Mainframe

(Continued from Page 26)

with some of the powerful micro-based software, such as spreadsheets, business graphics, word processing and data management. Examples fulfilling this expectation are MBA, the integrated software package of Context Management, and Visianswer, a joint product of Visicorp and Informatics General Corp.

While it may be cost-effective and operationally neat to have one device serve two different purposes from time to time and to facilitate the transfer of files between two systems, the major rationale for making the personal computer-to-mainframe connection is really motivated by the desire to exploit the respective resources of the large and very small DP systems.

Frank is an independent consultant and president of the Werner Frank Computer Group located in Calabasas, Calif.

Interface Ties
'SAS' Software,
Adabas DBMS

WASHINGTON, D.C. — Decision Resources Corp. has announced an interface between SAS Institute, Inc.'s SAS statistical software and Software AG of North America, Inc.'s Adabas data base management system.

Called Extract/A, the interface is an SAS procedure that enables users to retrieve a subset or all of the data stored in an Adabas file. It operates on IBM 370, 30 series, 4300 series and compatible hardware with the IBM OS operating system and requires Adabas Release 4.1 or later and SAS Version 79.5 or later.

The package can create an SAS data set with only the data users need for analysis, a spokesman said. Record selection utilizes the inverted file access methods of Adabas.

Extract/A handles differences between Adabas fields and SAS variables by referencing the Adabas data dictionary to learn how to read and interpret the names and values for each Adabas field. File security is maintained through passwords and cipher parameters.

Extract/A is priced at \$9,500 from Decision Resources at the Third Floor, 1701 K St. N.W., Washington, D.C. 20006.

End-User Training Examined:
How Is It Best Implemented?

Special to CW

Whether it comes through the information center, management information systems (MIS) or corporate educational services, end-user training has become a critical support function in most organizations.

During a recent meeting of Fuse, Inc., the independent users organization for Information Builders, Inc.'s Focus product, several in-house education specialists examined the results of end-user training in their firms.

At RCA Corp., DP training is available to anyone within the company who wants it, courtesy of the firm's Corporate Information Systems & Services Department in Cherry Hill, N.J.

Several IBM operating environments are offered, including CMS, MVS and TSO. Training is available on many of the proprietary software products running on those systems.

"We have found that live training is highly effective for us," said senior systems representative Barney Milstein. "Sometimes we travel to user locations to present classes, but most often users travel to our training center. Average classes are 10 to 15 people, and in the case of training on the Focus system, we spend two days at the introductory level and two days in the advanced classes," he said. Lectures are combined with problem-solving sessions at terminals and RCA-generat-

ed exercises.

Milstein's group also provides RCA users with a monthly newsletter that includes new product releases, vendor literature and hints for product usage. "We also schedule client visits to consult on specific product applications and explain to management how a particular piece of software can be used most effectively," Milstein said.

Telephone support is a standard service provided by the department. User support of the Focus product is aided by an in-house Focus users group.

At the Coca-Cola Co., training is available to all users of the firm's centralized IBM 3081, (Continued on Page 36)

'Tell-A-Graf' Targets HP 9000
'Tellaplan' Out for IBM, DEC Users

SAN DIEGO — Integrated Software Systems Corp. (Issco) has introduced Tellaplan, a project planning, report and schedule charting system for Tell-A-Graf users in IBM MVS or CMS or Digital Equipment Corp. VAX/VMS environments.

Issco also announced the availability of its Tell-A-Graf software in a multiuser environment on the Hewlett-Packard Co. HP 9000 desktop workstation under its HP-UX version of Unix.

Tellaplan provides capabilities to prepare plans and monitor schedules, including full reporting of staff requirements by skill type and actual-vs.-budget costing by department, a spokesman said. English language commands are used.

The product allows customizing of charts and can generate more than 25 types of cost/resource charts in a variety of formats. Revisions can be made while the project is in progress. Tellaplan allows "what if" anal-

ysis without modification of the original plan and computes the path between tasks every time the plan is updated.

Planning and scheduling charts can be produced for an individual schedule, departmental schedule or as a top-level overview.

Tellaplan will be available in September at a cost of \$12,500 for large mainframe computers, with an introductory price of \$8,800 until Oct. 5. Prices for smaller computer environments start at \$3,200.

HP 9000 users running Tell-A-Graf can generate charts and graphs locally to represent data within the workstation or downloaded from the mainframe, the spokesman said. Tell-A-Graf for the HP 9000 will be available in August at a price of \$9,500.

Issco is located at 10505 Sorrento Valley Road, San Diego, Calif. 92121.

'Mantis' Allows Access to IBM DL/1

CINCINNATI — Cincom Systems, Inc. has enhanced its Mantis fourth-generation application development system to allow direct access from Mantis programs to IBM's DL/1 data base files through the Mantis-DL/1 Access Logical User View.

The Mantis-DL/1 Access Logical User View is available for users of IBM's DL/1 data base on IBM and plug-compatible systems under DOS or OS with CICS, using Mantis Release 3.5 and above.

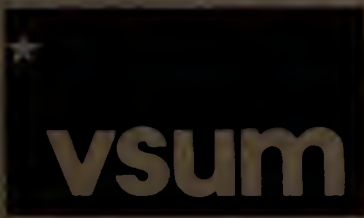
Programmer access to a DL/1 data base is accomplished

through the logical user view concept of Mantis, the vendor noted. This reportedly enables programmers to design access strategy on-line, without the need for I/O subroutines. Inquiry and update programs can be developed and tested on-

(Continued on Page 36)

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CW in Search of Stories On Changing Nature of DBMS

Data base management systems (DBMS) are increasingly in the news these days, and *Computerworld* wants to hear your views on the changing nature of these products for an upcoming Special Report.

The Special Report will appear in the Oct. 31 issue. It will include applications stories or case studies, which describe an end user's experiences with a product, and tutorials, which are non-product-specific articles describing a particular DBMS idea or concept.

Tell us how the use of DBMS has impacted your organization.

Describe what you see as the changes that are occurring in these types of products. Will relational systems make their way into traditional IBM IMS shops?

The articles should be four to six pages long and must be typed and double-spaced. Preference will be given to articles that include black-and-white photos and/or camera-ready artwork.

All material must be received by Sept. 5. More information is available by contacting Paul Gillin, Senior Writer, *Computerworld*, Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

On 'Marian,' 'Harold' Firm Announces Price Hikes

MEMPHIS, Tenn. — Computer Software Unlimited, Inc. has announced a \$1,000 price increase on two of its products: Marian, an on-line librarian package, and Harold, a teleprocessing monitor. Both packages were designed for IBM 370 and 4300 series processors.

Marian's features include full screen updating, elimination of repetitive programming tasks and automatic matching of compilation diagnostics to source code. In addition, the package features positive protection of source programs and full data compression, reducing the disk requirements for source programs, the vendor said. Marian now costs \$9,000.

Harold is an entry-level teleprocessing monitor designed to support Marian and user applications. User applications developed under Harold are upward-compatible with other teleprocessing monitors, such as IBM's CICS. Harold costs \$3,000, the vendor said from 1806 Malabar Drive, Memphis, Tenn. 38138.

Sperry Tailors Mapper Version For System 80s

BLUE BELL, Pa. — Sperry Corp. has announced Mapper 80, a new version of its Mapper applications development system that is tailored for the company's System 80 family of computers.

Mapper 80 was designed to allow end users to write their own programs and generate reports using the mainframe data base. The tool can also be used for application development by programmers, the spokesman said.

The interactive package features an integrated relational data base architecture and can operate with the full range of local and remote Sperry workstations. The system operates with more than 100 English commands that are used to construct most applications. The package is a compatible subset of the Mapper 1100 system and operates in parallel with other System 80 software.

The package will be available from Sperry Corp. in November at a license fee of \$204/mo. through P.O. Box 500, Blue Bell, Pa. 19424.

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'ADC' Manages Software Info

CONCORD, Mass. — Software Maintenance & Development Systems, Inc. has announced a package that manages software and information about software in a data base.

The product, called Aide-D-Camp (ADC), is available on Digital Equipment Corp. VAX-11 computers running on the Unix operating system.

The package offers on-line interactive information and change management facilities, a spokesman said. It is said to reduce development time and decrease disk storage requirements.

ADC can be used to develop software written in any language. The system maintains software sources and all changes to that software in a data base, the spokesman said. Changes are treated as logical units, which can be added to or subtracted from a named base version. New versions can serve as base versions for future development.

Information management facilities capture and maintain information on named entities, code, changes, versions and external documentation.

A single-site license costs \$42,000 from Software Maintenance & Development Systems through P.O. Box 555, Concord, Mass. 01742.

On-Line Documentation Facility Featured

Release 1.2 of 'Magec' Out for OS, DOS Users

DALLAS — Al Lee & Associates, Inc. has announced Release 1.2 of its Mask and Application Generator and Environment Controller (Magec) application generation software for IBM OS and DOS operating environments.

The new release features an on-

line documentation facility which is primed with user instructions for all the system's Magec functions and permits the user to enter and maintain an unlimited amount of documentation. The company claimed that the facility eliminates the need to write most documentation and

that updates to the on-line documentation are instantly available to all users. A cross-referencing scheme eliminates the need to key the same information repeatedly for similar or related topics, the spokesman noted.

The software monitors what the operator has been doing, any error messages received and misentries of key information. All entry and maintenance to the on-line documentation may be done on-line, and all text is stored on a system file.

Magec includes screen painting, Cobol program generation, on-line security, message compression and nonprocedural specifications entry. The product requires IBM's CICS or Applied Data Research, Inc.'s Datacom DC and supports a variety of data base management systems.

The price is \$28,900 plus \$7,500 for an optional report spooling feature from 2324 Seedling Lane, Dallas, Texas 75252.

Integrity Update Said to Speed Failure Recovery

ENGLEWOOD, Colo. — Integrity Solutions, Inc. has announced the Shadow File Processing feature, an enhancement to the firm's Data Recovery System (Integrity/DRS) for users of IBM systems software.

The Integrity/DRS package will run on any IBM 370 series or compatible processor using the OS/MVS, OS/VS1 or DOS/VSE operating systems. Shadow File Processing is said to provide faster failure recovery for installations which cannot tolerate disruption of its on-line network while Vsam files are being recovered. This feature reportedly maintains "warm" copies of critical on-line files, which can be maintained on either the same CPU, a different CPU or a remote processor.

Users can periodically apply journal records to a disk-resident Shadow File which is kept current at user-specified intervals. Therefore, if the installation's primary IBM Vsam file becomes unusable, the Integrity/DRS user can apply the last set of newly created journal records to the Shadow File. This process makes the Shadow File ready for use with minimum disruption to the firm's critical on-line environment.

Integrity/DRS, which now includes the Shadow File Processing feature, gives computer installations the ability to recover Vsam or Isam records or entire files.

The package costs \$15,000 for OS/MVS, \$12,000 for OS/VS1 and \$8,000 for DOS/VSE, Integrity Solutions said from 7351 E. Hinsdale Court, Englewood, Colo. 80112.

Zip Code Attachment System Produces Nine-Digit Codes

LOMBARD, Ill. — List Processing Co. has announced Zip Code Analysis Program (ZAP-9), a nine-digit Zip Code attachment system which automatically determines the U.S. Postal Service delivery sector and segment for any address in a specified five-digit area.

ZAP-9 affixes the appropriate four digits to each five-digit Zip Code and verifies any nine-digit Zip Code on file, a spokesman said. A segment can designate one side of a street between intersections, both sides of a street between intersections, a firm, a building or firm within a building or one or more floors within a building. In an IBM MVS batch processing environment, ZAP-9 can process up to one million addresses per hour, the

spokesman said. The product runs on IBM OS/VS and DOS/VS-compatible operating systems using IBM Vsam files. The price ranges from \$9,900 to \$29,900 from List Processing at 555 Waters Edge, Lombard, Ill. 60148.

DOS, OS, VS Users Offered 'CA-General Ledger' Package

JERICHO, N.Y. — Computer Associates International, Inc. has announced the availability of its interactive general ledger package, CA-General Ledger, for IBM DOS, OS and VS users.

CA-General Ledger has on-line ca-

pabilities coupled with real-time processing, a spokeswoman said. The package is a complete accounting, budgeting and reporting system. User-defined account number structures, fiscal years and accounting periods are available. Data entry, validation and inquiry is on-line. A report generator allows creation of an unlimited number of custom reports with simple commands, the spokeswoman said.

The package can be integrated with other CA financial management products, including accounts payable, accounts receivable, asset management and financial planning and modeling. A single transaction is posted first to the relevant subsystem and then to the appropriate general ledger account.

CA-General Ledger is priced at \$52,000 for OS and VS users and \$48,000 for DOS users from Computer Associates International at 125 Jericho Tnpk., Jericho, N.Y. 11753.

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Peripherals such as printers and flexible disk units can connect directly to the intelligent display unit, freeing the communication processor ports to support additional terminals. Data and programs can be stored locally. Alfaskop System 41 configurations can range from a single workstation to a multi-terminal system that interacts with a host computer and can also perform its own processing.

With any configuration, system integration is exceptionally easy. The same set of Alfaskop hardware is both compatible with and can interchange with most host systems. System 41 offers a choice of communications processors for remote and local interface. Synchronous (BSC and SNA/SDLC) and asynchronous protocols are standard. This

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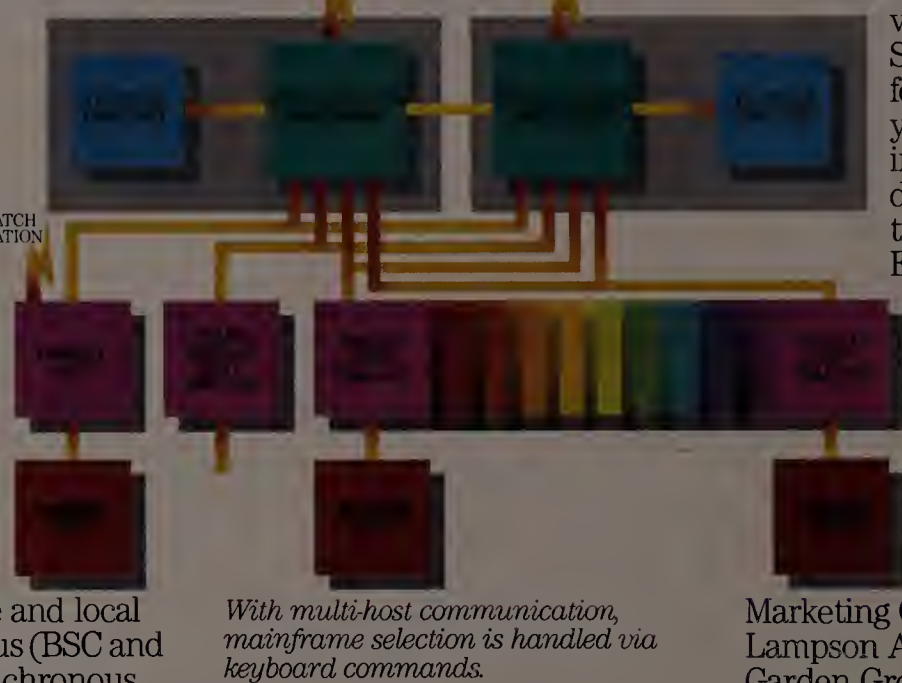
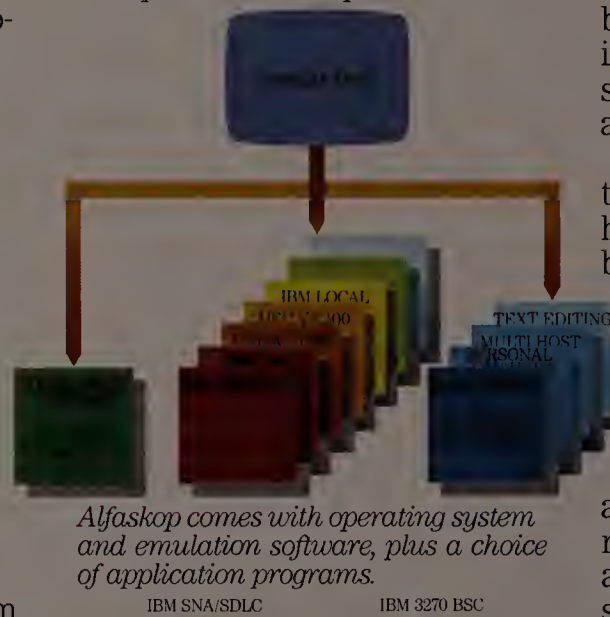
For less than optimum lighting conditions, the display unit has an integral hood to shield the screen from harsh, direct light. To be easy on the eyes, we've also incorporated a non-reflecting screen with amber characters on a brown background.

Further, the operator literally tailors the system to meet his or her preferences. The screen can be turned, tilted or swiveled to suit any posture and operating style. The keyboard and its detachable numeric pad are freestanding from the display unit so they can be individually positioned and angled. And with built-in palm rest, the Alfaskop keyboard always provides proper wrist support.

From both system and human

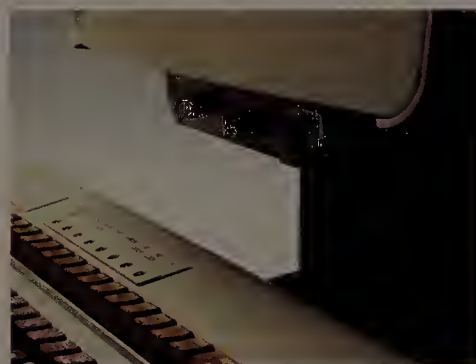
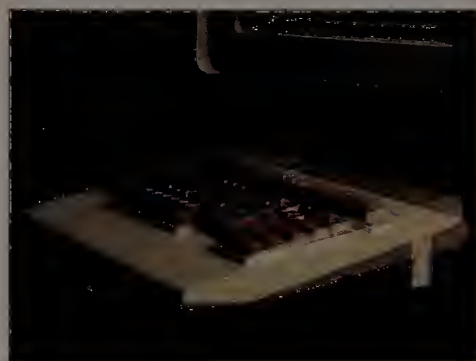
viewpoints, Alfaskop System 41 fits perfectly in the systems you design and integrate. For further details and application specifics, contact: Ericsson Information Systems, The Meadows Office Complex, 301 Route 17 North, Rutherford, NJ 07070. Telephone (201) 939-5300.

Or Ericsson Information Systems Marketing Operations, 7465 Lampson Avenue, P.O. Box 938, Garden Grove, CA 92642. Telephone (714) 895-3962.



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ORDER TYPE:	41	ORDER TYPE:	41
YOUR REF:	B PORTER	YOUR REF:	B PORTER
TRANSPORT:	AIR	TRANSPORT:	AIR
DEL COND:	FRANCO	DEL COND:	FRANCO
PAYM COND:	30 DAYS NET	PAYM COND:	30 DAYS NET
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UCC-1 Tape Management Updated With Release 4.7

DALLAS — University Computing Co. has announced Release 4.7 of its UCC-1 Tape Management system.

The product runs on IBM 70 and plug-compatible mainframes under IBM's OS operating system. It includes an interface to UCC-9/R+, which was designed to help users remove bad tapes from their libraries.

The new version includes a scratch subpool function that permits users to divide their scratch tape pools into subpools that are relevant to their operation. Subpools can be based on the tapes' location in the library, physical characteristics of the tape or the intended use of the tape volume in the subpool, a spokesman said.

System/38 Gets Tool From Trisys

SHREWSBURY, Mass. — Trisys, Inc. has announced a Resource Account Management and Statistical Exception System (Ramses) as part of its series of IBM System/38 operational, documentation and conversion tools.

Ramses comprises four major subsystems offering a historical job data base, resource data collection, storage allocation management, resource utilization graphing, detail and summarization, job reporting, cost center management and job exception reporting.

Engineered for the System/38 object-oriented architecture, Ramses costs \$750 from Trisys through P.O. Box 274, Shrewsbury, Mass. 01545.

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clude improved general report writer capabilities, extended on-line security for password-protected volumes, production of external labels through the tape inquiry mode and expanded audit trail tracking.

Release 4.7 of UCC-1 costs \$21,500 from University Computing, UCC Tower, Exchange Park, Dallas, Texas 75235.

Release 2.1 of Netman Package Boasts Over 30 Additional Features

SANTA MONICA, Calif. — California Software, Inc. has announced Release 2.1 of its Netman data center and data communications management package for IBM mainframes operating under the DOS, DOS/VSE, OS/VS1 and MVS operating systems.

Netman provides on-line facilities for configuration, problem, change and finan-

cial management.

Release 2.1 includes more than 30 additional features including: Netman-driven electronic mail (with a facility for delaying delivery of user-defined messages at a prespecified future date), problem broadcasting (with a facility for reprinting trouble tickets periodically until the problem is resolved), on-

line reporting and mass copy or transfer of actual or prototype configurations.

Release 2.1 is available to current Netman users at no additional charge. Netman costs between \$14,500 and \$32,500 depending on operating system and options. California Software is located at Suite 304, 1460 4th St., Santa Monica, Calif. 90401.

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TC-500's unique display gives you immediate access to program, network and diagnostic information for up to 32 synchronous or asynchronous channels.

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End-User Training Seen Key Support Function

(Continued from Page 29)
and today more than 900 TSO users work on the system. Separate training classes are held for DP personnel and end users, and completion of a special TSO class is mandatory before new users can enroll in other DP classes.

"The training department and MIS work together on a training development team to design the materials and

presentation format for each course," said time-sharing coordinator Lee Donaldson. Classes in the Atlanta-based training center include both lectures and hands-on workshops. Recently, the firm began to experiment with outside consultants/instructors for classes in Focus, SAS Institute, Inc.'s SAS and Executcom Systems Corp.'s Interactive Financial Planning System.

According to Donaldson, the "outside instructors ensure a professional course design and consistent quality. They also can be counted on to make certain all course materials are kept up-to-date to include important new product features."

Experience in end-user training has led Coca-Cola to develop the following internal criteria for a successful end-user training program:

- Adequate facilities and terminals with no more than three students using each terminal.
- Quality instructors either in-house or outside.
- Enough workshops to provide fundamental understanding of material.
- Complete handouts and manuals.
- Active technical support after training.
- A centralized support

group provides hot-line support to users, and a semiannual "TSO Update" newsletter is issued.

In sharp contrast to RCA and Coca-Cola, much of the end-user training function has been eliminated at the Equitable Life Assurance Society in New York, according to senior project manager Larry Brendler. Although products like Focus and SAS are heavily used by nontechnical end users there, the Equitable systems department has created a front-end system facility to allow users to write simple report requests without product-specific training.

The internal system, called Manager's Workbench, includes prompts that guide the user through "yes" and "no," fill-in-the-blank and multiple-choice questions.

"We hold a somewhat different view of end-user training because we feel nontechnical people don't really want to learn to use a language, even the most simple of languages, if they won't be using it on a regular basis," Brendler said. "We feel a large population of our users are infrequent users who really wouldn't benefit from knowing all the details even if they wanted to learn them."

Manager's Workbench is somewhat limiting, according to Brendler, but when users want additional capabilities, they are sent directly to off-site vendor training classes.

PROGRAM MAINTENANCE.

IT'S AN IDEA WHOSE TIME HAS GONE.

Most application programmers should really be called maintenance personnel: 60 to 80 percent of their time is consumed making "quick" patches. While the applications development backlog steadily mounts.

Fortunately, users of Microdata computer systems have a way to break the logjam: ALL: The Application Language Liberator.

ALL users define their applications on a series of menu-driven input screens. While ALL automatically builds the application from a comprehensive set of debugged, machine language building blocks.

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ALL cuts new application development that once took months down to a few days work. Major applications involving complex file structures, multi-level input screens, multiple report formats, menus, utilities, detailed math and logic functions, and security access provisions can be developed easily using the ALL system.

Imagine! Less maintenance. Automatic documentation. Faster development. Bye-bye backlog.

For more information on an idea whose time has come, write Microdata Corporation, P.O. Box 19501, Dept T-208, Irvine, CA 92713.

Mantis Gets DL/1 Access

(Continued from Page 29)
line. In addition to DL/1 files, the Mantis logical view provides access to Cincom's Total Information System and Total data base files and to IBM Vsam files.

The Mantis-DL/1 Access Logical User View is separated into the DL/1 Access Design Facility and the DL/1 Call. The DL/1 Access Design Facility is said to allow the data base administrator to define the structure of the data base segments to be used. The DL/1 Call consists of an interface statement that is used to define the interface area and a call statement that handles communications with the DL/1 Access Logical User View.

The DOS and OS versions of Mantis-DL/1 Access Logical User View can be purchased for \$9,950. Leasing plans also are available, the vendor said from 2300 Montana Ave., Cincinnati, Ohio 45211.

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1983

For Public Data Network Protocols Progress Seen Likely in Standardization

By Phil Hirsch

CW Washington Bureau

BOSTON — Substantial progress is likely this year and next in standardizing protocols for public data networks, according to T. B. Steel of American Bell, Inc. Steel was the leadoff speaker at a standards session during the recent International Conference on Communications held here by the Institute of Electrical and Electronics Engineers.

The session focused on the Open Systems Interconnection (OSI) model, a draft standard proposed by the International Standards Organization (ISO), which Steel defined as a "logical construct describing what should be standardized and where" to permit communications between "application processes" — typically, programs — lodged within terminals and computers linked via one or more networks.

The OSI model consists of seven layers; each is intended ultimately to form the basis for a set of standards. Level 1 involves a terminal and its associated modem, and Level 2 is concerned with the data link typically connecting a terminal with a network node.

Higher levels of the model define the functions that have to be standardized to provide communications between the terminals and processes at the extremities of a network-based message path.

AT&T Service to Link Users Through Touch-Tone Phones

By Phil Hirsch

CW Washington Bureau

BOSTON — A computer-controlled teleconferencing service that interconnects participants through Touch-Tone telephones was one of the new offerings AT&T discussed here at the recent International Conference on Communications, sponsored by the Institute of Electrical and Electronics Engineers. The company also talked about plans to increase the transmission capacity of its satellite network.

The new teleconferencing system will be based on a computerized Network Services Complex (NSC) which allows an audio conference to be established automati-

The main result of the OSI standardization effort to date is X.25, which provides one implementation of the first three OSI levels. X.25 was developed by the Consultative Committee on International Telegraph and Telephone (Continued on Page 38)

Communicating Terminal Input Sought for CW Special Report

Computerworld is looking for a few good stories on data communications terminals. An Aug. 29 Special Report is now in the making, and contributions should be received by July 11.

Stories may take two forms:

- Tutorials covering a trend or direction in data communications terminals. For example, how will data communications terminals compete with personal computers? What are some new uses of these terminals? Who should be given such a terminal? Can noncommunicating terminals be upgraded for networking?

- Case studies of users who have solved specific business problems with certain types of data communications terminals.

Both vendors and users are invited to submit articles written in the third person, but no story that is only a product endorsement will be accepted.

Articles should be between four and six double-spaced typewritten (no dot matrix) pages in length. Authors are encouraged to include any camera-ready art of charts or graphs and black-and-white photographs pertaining to the article.

Please include with all submissions a very brief biography of the author (name, title, company, city, state) and a telephone number at which he can be reached. Articles should be sent to Jim Bartimo, Computerworld Editorial Department, P.O. Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

cally. The conference originator will call the NSC, which is physically connected to a No. 4 ESS network switch. In response to recorded audio prompts received from the NSC, the originator will then input the telephone numbers of the individuals he wants included in the teleconference.

AT&T currently offers a similar service, but it requires a human operator and has extremely limited ability to accommodate graphics terminals. The new system reportedly can interconnect any device that complies with the Consultative Committee on International Telephone and Telegraph Group IV facsimile protocol.

According to Peter Nash, a Bell Laboratories engineer who helped develop the system and described it at the conference, AT&T's Long Lines Division plans to tariff the new teleconferencing system in September.

The NSC "has been designed for initial support of several capabilities," Nash added. One such capability is Extended 800 (Continued on Page 40)

Northern Telecom Cuts CRT Price Tag

MINNEAPOLIS — Northern Telecom, Inc. has announced a 19% price reduction for its Displayphone 100 terminal.

Listed now at \$1,295 for domestic sales, the desktop combination telephone and data terminal simultaneously transmits and receives voice and data communications.

The Displayphone 100 features a retractable keyboard and display screen, a spokesman said.

More information is available from Northern Telecom at Data Park, Box 1222, Minneapolis, Minn. 55440.

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Warranty On Monitors Extended

SALT LAKE CITY, Utah — Questronics, Inc. has announced the extension of the warranty on the company's Model CPA/7 data communications monitors from three months to three years.

The Model CPA/7 monitors data communications lines for IBM's Binary Synchronous Communication or Systems Network Architecture/Synchronous Data Link Control protocols.

The CPA/7 reportedly evaluates system performance by monitoring a line and providing a hard-copy printout for analysis. The unit measures response time, number of transactions and line utilization. It also offers raw data dump for data basing and retentions of all parameters during power interruptions.

The extended warranty covers parts and labor as well as upgrades that may occur during the three-year period.

The monitor is priced at \$7,500. More information is available from the vendor at 3565 S.W. Temple, Salt Lake City, Utah 84115.

Tri-Data Offers Z80-Based Processor

MOUNTAIN VIEW, Calif. — Tri-Data Corp. has announced the OZ 228, a programmable communications processor based on the Zilog,

Inc. Z80 microprocessor.

The OZ 228 is equipped with an integrated Bell 212A intelligent modem. In addition to the base 212A modem

functions, users and systems integrators can develop their own application programs for most storage, data entry communications or network requirements, the vendor said.

The unit reportedly can improve operator productivity and network flexibility by reducing the load on host processors, workstations and communications lines, the vendor said.

In addition, the OZ 228 includes all the features of Tri-Data's OZ 225 intelligent network modem, including automatic dialing and logon,

speed buffering, flow control and dial directory maintenance.

The OZ 228 contains 64K bytes of dynamic random-access memory (RAM), expandable to 128K bytes, 2K bytes of Cmos RAM and three 8K-byte electronically programmable read-only memory chips, the vendor said.

The OZ 228 will be available in August and costs \$1,590 for a 64K-byte RAM configuration. The 128K-byte version costs \$2,060, Tri-Data said from 505 E. Middlefield Road, Mountain View, Calif. 94043.

CDS Lowers Price by \$700 On Full-Duplex Modem

WALTHAM, Mass. — Concord Data Systems, Inc. (CDS) has lowered the price

of its CDS 224 2,400 bit/sec full-duplex modem by \$700.

Capable of operating in both synchronous and asynchronous modes, CDS 224 reportedly doubles the throughput of 1,200 bit/sec full-duplex dial modems and reduces 2,400 bit/sec half-duplex modem turnaround time.

An automatic, 1,200 bit/sec fallback mode allows a centrally located CDS 224 to accept data from modems transmitting at either 1,200 or 2,400 bit/sec by adjusting itself to the speed and modulation of the incoming call, a vendor spokesman said.

The CDS 224, which supports most half- and full-duplex protocols, costs \$995, down from its previous price of \$1,695. CDS is located at 303 Bear Hill Road, Waltham, Mass. 02154.

PT14 Boasts Alternative

SANTA MONICA, Calif. — GR Electronics, Ltd. has unveiled the PT14, said to be a portable, low-cost alternative to the conventional desktop terminal.

The PT14 reportedly offers a convenient method of controlling and interrogating computer systems. It has a 40-key, positive tactile-response keyboard; 32-char. memory; an RS-232/20 mA interface; and 300/110 bit/sec transmission rates.

The PT14 costs \$425 from the vendor at 1640 Fifth St., Santa Monica, Calif. 90401.

Speaker Sees Real Progress For Protocols

(Continued from Page 37)
tative Committee on International Telephone and Telegraph (CCITT), an association of the world's telecommunications administrations. It is one of two major sources of international standards; the other is the ISO.

CCITT and ISO are "actively working" on another network standard to complement the one incorporated into X.25, according to a paper included in the conference proceedings, but details concerning the status of this effort were unavailable because the author, Christine Ware, of GTE Business Communication Systems, Inc., was unable to attend.

At the session on standards, Richard Gillman of Bell-Northern Research Ltd. reported that standards for the fourth (transport) and fifth (session) layers of the OSI model are both likely to be adopted in final form by the end of next year. Draft versions of both standards are now being voted on by members of the ISO, he said, and CCITT is not far behind.

Gilman expects drafts of CCITT recommendations covering the transport and session layers to be adopted early next year.

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Personal Computers? Micros? Desktops? Call them what you will, they are all integral parts of your OA strategy. The personal computer phenomenon must be analyzed and tracked if it is to be used effectively. In the next OA Focus section of *Computerworld OA*, we'll examine how personal computers will affect new and experienced computer users, their work habits and staff requirements. We'll look at management strategies, user experiences and key product offerings. Users who have lived through the process will suggest methods to tie personal computers into a total organizational network or to keep them as personal data bases. And, we'll have an update on information centers.

In this issue, we'll also have an interview with author Alvin Toffler as well as articles on subjects such as information systems, measuring productivity, data base management systems and a productivity study on electronic mail.

Computerworld OA keeps you current on all aspects of office automation with coverage of both state-of-the-art technology and just-developing trends of the future. And every issue of *Computerworld OA* takes a closer look at a key issue in the OA Focus.

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MCI International To Cut Telex Costs

RYE BROOK, N.Y. — MCI International has announced a plan to reduce the cost of the international component of telex calls by 10% to 25%. The discounts are available to MCI customers and customers of other carriers, including ITT, RCA Corp. and Western Union.

Based on their increased international telex traffic, customers will receive discounts beginning the effective date of the tariff, according to a vendor spokesman. Customers who had no MCI traffic in January will receive discounts on all MCI International billings for a 90-day period.

More information is available from MCI at One WUI Plaza, New York, N.Y. 10004.

With Lightning Suppressors Line Expander, Converter Offered

ATLANTA — Computer Peripheral Systems, Inc. has announced a Burroughs Corp. two-wire direct interface (TDI) Line Expander and RS-232 converter with lightning surge suppressors for indoor/outdoor operation.

The Ex-Con is available in three models: Model I is configured as a TDI line expander that will reportedly expand the capability of a fully configured TDI line.

Model II is configured as an asynchronous RS-232-to-TDI converter said to enable asynchronous RS-232 Burroughs terminals, modems or micros to operate on TDI lines.

Model III is a dual-mode unit said

to combine the capabilities of the Model I Expander and the Model II Converter into one unit to permit simultaneous operation of RS-232 and TDI devices on expanded lines.

Model I costs \$225; Model II costs

\$195; and Model III costs \$275. The lightning surge suppressors are an extra \$25 per outdoor TDI port. Computer Peripheral Systems can be reached through P.O. Box 98282, Atlanta, Ga. 30359.

Teleconferencing Service From AT&T Studied at Meet

(Continued from Page 37)

service, which Long Lines is expected to offer before the end of this year. The service will allow incoming calls to a given recipient to be

automatically routed to any of several locations, depending on the location of the calling party, time of day and other variables.

A typical use of Extended 800 service, Nash explained, would be to connect a stranded motorist to a nearby garage. The system would choose the garage after determining the caller's location by sensing the area code and number of the telephone he was using.

Another possible application would enable a traveling salesman to receive calls at each of several pre-specified locations.

In a paper entitled "The Changing Role of Satellites in AT&T's Communications Network," Robert F. Latter of Long Lines reported that the company is studying the use of Companded Single Sideband (CSSB) transmission on its new Telstar 3 satellites, the first of which are scheduled to be launched this month. Employing CSSB instead of conventional FM modulation on a satellite can increase its capacity from 1,800 voice-grade circuits to 7,800, Latter said.

He also reported that "we are gradually shifting away from use of our domestic satellite system for the shorter [Continental U.S.] circuits. As transponders are sold for TV or wide-band data, the shorter telephone message circuits are being shifted to terrestrial facilities. Our long-range plan is to continue [this process] with the possible exception of the longer routes."

CRT Emulations Out for Softterm

MEMPHIS, Tenn. — Softronic, Inc. has released five block-mode terminal emulations for Softterm, the vendor's high-speed CRT terminal emulation program for Apple Computer, Inc.'s Apple II and IIe computers. The new terminal emulations include the IBM 3101 Model 20, Honeywell, Inc.'s VIP7205, Televideo Systems, Inc.'s 925 and Hazeltine Corp.'s 1520.

Softterm reportedly operates on the Apple II and IIe to provide an exact look-alike for 20 popular CRT terminals used to access applications on host computers and time-sharing systems, according to a spokesman for the vendor.

The Softterm terminal emulation program, including a 300-page user's guide and terminal emulations for about 21 models from 10 vendors, is available for \$150 from Softronic, 6626 Prince Edward Place, Memphis, Tenn. 38119.

Learn more about Personal Computing, Office Automation or Communications in these video journals from CW Communications and Deltak.

Personal Computing: A Business Perspective

Taped on location during CW Communications' COMPUTERWEEK conference, these six video sessions feature many of the biggest names in the microcomputer industry as they share their insights into the application of personal computers in the business environment. Each of the six tapes is 20-30 minutes long, and focuses on a specific issue. Available through Deltak singly or as a group.

- *Thinking Small for Big Business*
- *The Purchase Decision*
- *Finding a Vendor*
- *Sales Trends and IBM*
- *New Languages and Networking*
- *A Look Toward the Future*

Office Automation: The Essential Issues

Last Fall, executives from around the country attended the OA Forum, a national conference conducted by CW Communications on the introduction, integration and implementation of office automation in today's business environment. Leading industry experts and top corporate managers discussed key office automation planning issues. These discussions are now available to you in seven carefully edited conference journals. Each journal is in full color, and 20-30 minutes long. They are available from Deltak singly or in a group.

- *The DP Role in Office Automation*
- *Planning for Office Automation*
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Communications

Leading experts in all areas of communications were recently taped at the 1983 Communication Networks Conference in New Orleans. The result was two brand new video conference journals of

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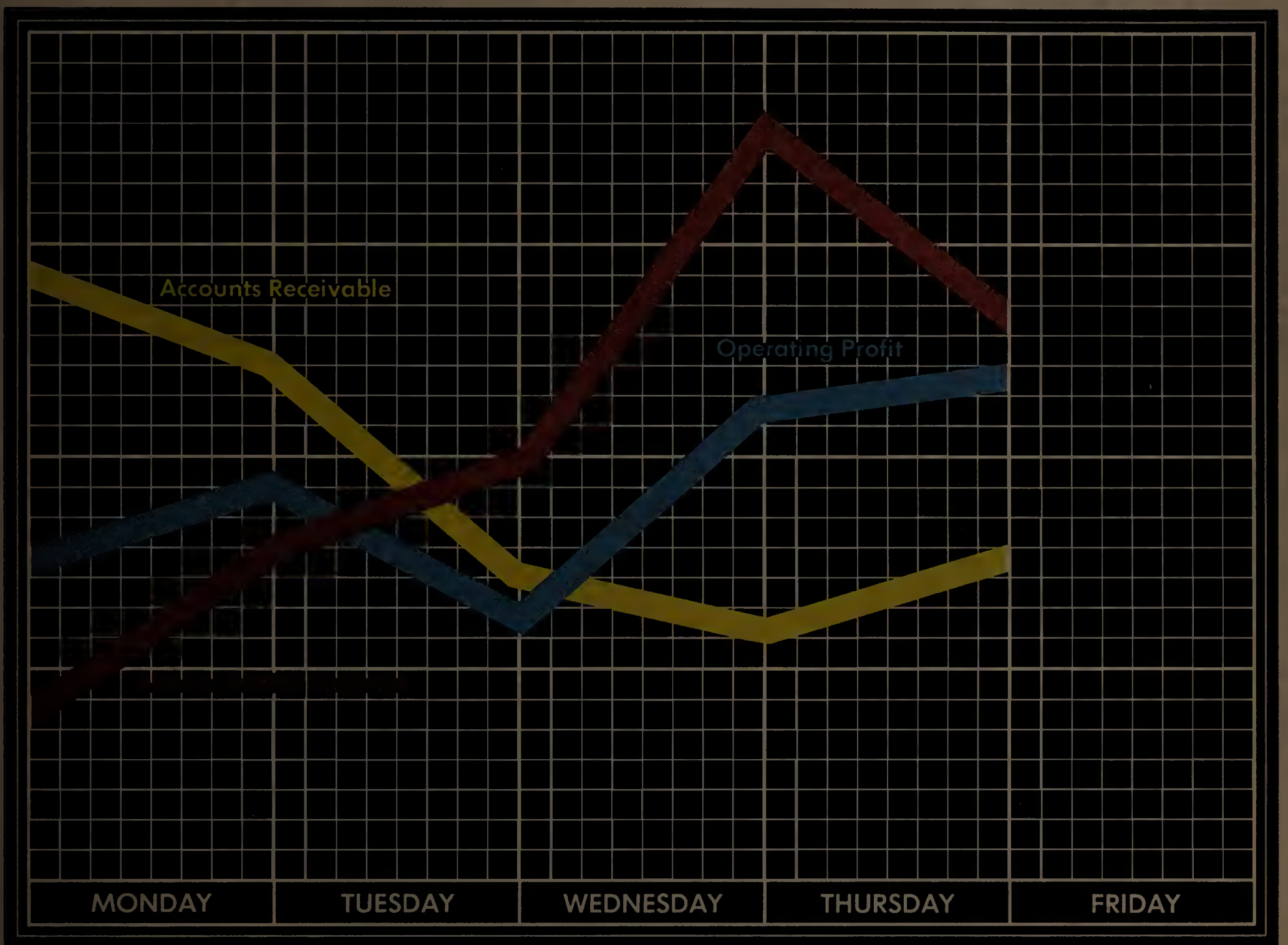
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Comdesign Introduces Its TM Series of Modems

GOLETA, Calif. — Comdesign, Inc. has introduced its TM series of modems.

The TM-1200 is a Bell 212A-compatible modem operating full-duplex asynchronous at 300 bit/sec, or full-duplex synchronous/asynchronous at 1,200 bit/sec over a two-wire dial-up circuit.

The TM-2400 modem reportedly provides antistreaming protection to eliminate network jams. Operating full-duplex synchronous at 2,400 bit/sec, the modem is reportedly compatible with Bell Laboratories 201B data sets.

The TM-4800 is designed for use in conjunction with the switched

telephone network or with two-wire circuits, providing full-duplex operation except in a two-wire network when it operates in a half-duplex mode, according to a spokesman for the vendor.

The TM-9600 is designed for four-wire operation in point-to-point configurations and includes self-test, analog, digital and remote digital loopback.

The 1200 and 2400 modems sell for \$750. The 4800 costs \$1,750 and the 9600 is priced at \$2,750, according to the spokesman.

More information is available from Comdesign at 751 S. Kellogg Ave., Goleta, Calif. 93117.

Teleterm Enhancements Out

WILLINGBORO, N.J. — Telexpress, Inc. has announced the release of Teleterm Version 2.0 and Teleterm-EM, a Teleterm terminal emulator software package.

Both integrated packages are said to combine the functions of word processing and communications into one product. In addition, Teleterm-EM reportedly provides the capability of emulating any terminal as long as the functions are supported by the microcomputer.

Teleterm-EM and Teleterm 2.0 are also said to feature supporting utilities under menu control; direct disk-to-disk file transmission between Teleterm systems; autotransmit messages up to 255 characters; and access to common time-sharing systems.

Pricing for Teleterm 2.0 on the IBM Personal Computer and Radio Shack TRS-80 Models II, 12 and 16 is \$165 and for the TRS-80 Model 4 is \$135. The price for Teleterm-EM is \$225 for TRS-80 Models II, 12, 16 and the IBM Personal Computer and \$175 for the Model 4. The firm can be reached through P.O. Box 217, Willingboro, N.J. 08046.

IDS Releases Selector Switch, 6200 Modem

LINCOLN, R.I. — International Data Sciences, Inc. has introduced a modem designed for asynchronous operation over private two- and four-wire nonloaded metallic conductors at speeds up to 19,200 bit/sec.

The Model 6200 limited-distance modems can be used in both point-to-point and multidrop network configurations and for local data distribution up to nine miles.

Features of the modem include internal strap selections for receiver impedance, receiver equalizer and two- or four-wire operation. The modem employs a baseband modulation scheme that varies the voltages of the transmit signal on a balanced line, according to the vendor.

The vendor also announced its Model 8506-D, A, B selector switch to the expanding Series 8500 Minitech desktop switching modules; the Model 8506-D is used to switch the 25-pin EIA RS-232 or CCITT V.24 interface to either of two outputs.

The modem is priced at \$250 and the selector switch costs \$175. International Data Sciences is located at 7 Wellington Road, Lincoln, R.I. 02865.

Data Test Set Offered, Aimed At Technicians

BEDFORD HEIGHTS, Ohio — Electrodata, Inc. has announced the CTS 1, a hand-held battery-operated data communications test set.

Designed for the first-line service technician in the data communications industry, the test set can be used with modems, multiplexers and data communications links. The CTS 1 will perform bit and block error-rate tests, bias distortion tests, count and trap pulse transmissions and make delay measurements. All operating parameters are menu selected and retained while power is turned off, the vendor said.

Bit and block error-rate tests can be run on both full- and half-duplex synchronous or asynchronous systems using one of eight patterns. The unit supports RS-232 or CCITT V.24 protocols and will count and display bit errors, block errors, blocks received and synchronization faults, the vendor said.

The CTS 1 costs \$1,495. The firm also announced its high-end version of the CTS 1, the CTS 2, which has been reduced from \$2,295 to \$1,995. Electrodata is located at 23020 Mil Road, Bedford Heights, Ohio 44128.

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HP Customer Service Ranks High: Study

By Marguerite Zientara
CW Staff
FRAMINGHAM, Mass. — Users of Hewlett-Packard Co.'s customer service organization rated HP higher than other users rated their vendors' services in a recent International Data Corp. (IDC) survey of small business systems users.

The 305 survey respondents first ranked the following six factors in descending order of importance: equipment reliability, company reputation, availability of parts, field service organization, cost of service and cost of spare parts. "In every category, [HP users] felt that HP equaled or surpassed their needs," IDC reported in "User Satisfaction With Customer Service," a research report pre-

pared for its Continuous Information Services clients. Those ratings were "higher than any other group of respondents," IDC pointed out.
HP also ranked high in the area of problem correction in a single visit. "Again, [HP] results show they were able to fix the problem in one visit 90% to 99% of the time for 88% of the [HP user] respondents," IDC reported.
"Less than 50% of both Data General [Corp.] and Prime [Computer, Inc.] users had their problems corrected the first time 90% to 99% of the time," the report noted.

In examining desired and actual response times (see Figure 1), IDC stressed that "the desired times will hardly ever

	Desired Time Emergency	Actual Time Emergency	Desired Time Normally	Actual Time Normally
Burroughs Corp.	1.87	3.08	8.50	10.11
Data General Corp.	2.14	4.09	5.36	9.00
Digital Equipment Corp.	1.85	2.95	5.02	5.31
Hewlett-Packard Co.	3.21	3.52	5.48	5.90
Honeywell, Inc.	1.17	7.00	3.17	11.83
IBM	1.50	2.33	3.63	4.25
Prime Computer, Inc.	1.17	2.47	5.22	5.94
Texas Instruments, Inc.	3.31	7.37	9.44	20.81
Wang Laboratories, Inc.	2.32	8.29	8.57	15.93
Third-Party Firms	1.84	4.34	10.86	11.00
Sorbus	1.14	2.09	3.36	10.73

Source: International Data Corp.

Figure 1: Response Time by Vendor (in Hours)

match actual times because users will always expect a little better than they are actually getting." Under normal condi-

tions, IBM led the pack with an average response time of 4.25 hours.

Digital Equipment Corp. followed with 5.31 hours, then HP with 5.90 hours; also in the running was Prime at 5.94 hours. The next closest time was DG with nine hours.

Under emergency conditions, third-party maintenance vendor Sorbus, Inc. started with an average 2.09 hours response time, followed by IBM with 2.33, Prime with 2.47 and DEC with 2.95.

The longest average waits for emergency service were for Wang Laboratories, Inc. users at 8.29 hours, Texas Instruments, Inc. users at 7.37 hours and Honeywell, Inc. users at seven hours.

The survey pinpointed the three most important elements of telephone service staffing for field service organizations:

- "Giving the user the ability to reach the right person to provide assistance — there

(Continued on Page 46)

	Burroughs	DG	DEC	HP	Honeywell	IBM	Prime	Wang	Sorbus	Third Parties	All
Prompt arrival on site	3.4	3.2	3.6	3.9	3.1	3.6	2.9	3.4	3.5	3.5	3.5
Reaching right person at service office	3.3	3.1	3.7	4.0	3.1	3.7	3.3	3.4	3.8	3.7	3.6
Ability to get parts	3.3	2.9	3.6	3.8	2.9	3.8	2.9	2.9	2.9	3.4	3.5
Reliability of parts	4.1	3.2	3.6	4.4	3.0	4.2	3.9	3.3	3.4	3.8	3.9
Service rep. repairs equip. without tech. assistance	3.8	3.6	3.5	4.1	3.4	3.9	3.6	3.6	3.9	4.1	3.8
No need to replace parts	3.3	3.0	3.1	3.7	3.2	3.5	3.1	3.0	3.4	3.5	3.4
Time taken to return with proper parts	3.3	3.1	3.4	3.6	2.8	3.6	2.8	3.2	2.8	3.4	3.4

Source: International Data Corp.

Figure 2: Service Performance by Vendor Rated on a Scale of 1 to 5, the Latter Representing 'Excellent.'

Rival IBM's 3250 Workstation

CDC Adds Low-End Icem Models

MINNEAPOLIS — Control Data Corp. has come up with two versions of a computer-aided design (CAD) and drafting system centered around the firm's Integrated Computer-Aided Engineering and Manufacturing (Icem) workstation.

The two systems, designed as direct competitors with IBM's 3250 CAD/computer-aided manufacturing (CAD/CAM) workstation, are compatible with CDC's Cyber 170 series of mainframes and its Cybernet time-sharing network.

The entry-level system, dubbed the Icem 120-40, features the Icem 120-40 desktop workstation, CD/2000 design/

drafting software, an IBM Hsp II communications protocol and software that allows the system to operate with plotters made

by California Computer Products, Inc.

The more advanced version
(Continued on Page 46)

Compupro Unveils Multiuser Micro

HAYWARD, Calif. — Compupro has unveiled what it is billing as the first multiuser microcomputer that simultaneously executes both 8- and 16-bit industry-standard software.

Dubbed the Multipro Model 10, the four-user system supports word and data processing and communications functions through a shared data base reportedly at speeds faster than

personal computer-based network configurations.

Standard features of the system include an 8 MHz version of Intel Corp.'s 8088 microprocessor with 1M byte of main memory; seven serial ports, including a modem port and a Centronics Data Computer Corp. printer port; 384K bytes of solid-state memory; and dual 5¼-in. floppy disks that hold

1.6M bytes of formatted data. Also, four Zilog, Inc. Z80B processors, each with its own 64K-bit random-access memory chip, are included as part of the standard system.

Compatible with the vendor's MP/M 8/16 operating system, the system also comes bundled with a menu-driven electronic spreadsheet and
(Continued on Page 48)

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CDC's Icem workstation displays a modeling program.

CDC Extends Icem Series With Low-End Models

(Continued from Page 45)

of the system, called the Icem 120-70, contains the same software as the 120-40, but can support as many as six users simultaneously.

Optional software for both systems includes Basic, Fortran 77, Fortran V programming languages and Data General Corp.'s Comprehensive Electronic Office (CEO) office automation software package.

Al Christman, general manager of manufacturing industry marketing, said the Icem 120-40, priced at \$50,000, is intended to attract small manufacturers that have been unable to afford a high-priced CAD/CAM system. "This new product extends

our Icem solution to small manufacturers who previously could not afford the benefits of CAD/CAM technology," Christman said. Prices for the 120-70 start at \$161,000.

Along with the two Icem/120 workstations, CDC also unwrapped a software program that allows users to create electrical schematics interactively. Price of the program is \$16,500. It is expected to be available during this year's fourth quarter.

The Icem/120 systems debuted last week at the National Computer Graphics Association Show in Chicago, the company said. CDC can be reached through Box O, Minneapolis, Minn. 55440.

Tape Transports Out for Micros

SAN DIEGO — Innovative Data Technology has introduced a line of IBM/Ansi/Ecma-compatible ½-in. magnetic tape subsystems for personal computers.

Three different ½-in. tape transports supporting from 20K bytes to 160K bytes and transferring at tape speeds from 12½ in./sec to 100 in./sec are available, the vendor spokesman said.

All tape transports support 10½-in. reels and may be coupled via the vendor's intelligent controllers to most personal computers, according to the spokesman for the vendor.

Prices for complete subsystems range from \$4,995 to \$9,175. More information is available from Innovative Data at 4060 Morena Blvd., San Diego, Calif. 92117.

HP Service Gets High Marks: IDC

(Continued from Page 45)

must be a knowledgeable person on the other end of the phone."

• "Companies must make it easy to report service problems. This includes a knowledgeable person, perhaps an 800 number, as well as a standard list of appropriate questions to run through to diagnose a problem properly."

• "Another element is the arrival of a [serviceman] within the time estimated by a call-taker. Obviously, once a customer calls in for a [serviceman] and a time commitment is made, the customer begins planning for the arrival of the [serviceman]. That commitment must be fulfilled."

Vendor ratings in those areas were generally satisfactory, according to the survey.

In an attempt to rate the overall performance of the primary suppliers, IDC asked survey respondents to rate the firms in seven specific areas (see Figure 2 on Page 45). "Overall, the responses show that most users are fairly satisfied with all the results, [having indicated] a rating between 3.4 to 3.9," the report said.

Copies of the report are available for \$2,500 from IDC at Five Speen St., Framingham, Mass. 01701.

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CDC Seeks Full Integration of CAD/CAM Functions

By Ed Scannell
CW Staff

Realizing the frustrations of most computer-aided design and manufacturing (CAD/CAM) users that are unable to run more complex programs, Control Data Corp., like IBM, is attempting to solve the problem by providing its customers with products that allow them to integrate their engineering, manufacturing and administrative functions.

"CAD/CAM used to be viewed as a graphics problem, but now it is being seen as a data management and telecommunications problem," said CDC's Al Christman, general manager, manufacturing industry marketing. "People want new approaches, integrated approaches, that will tie

all of these islands of automation together," he added.

Christman said today's use of CAD/CAM implementations is characterized by single-function and/or department-level solutions. "As an example, 80% of CAD systems are used for drafting. This dedication to a specific function indicates the use of CAD/CAM as a department-level solution to short-term problems, rather than as part of a corporate, overall long-range plan," he related.

Christman said the consequence of the single-function application is the proliferation of data bases and systems from a number of different vendors that are not accessible to all users. "The result is an expensive, time-wasting, less efficient effort

Analysis

that erodes the productivity the system promotes," he asserted.

This consequence is compounded by the lack of communication among these single-function systems which, according to Christman, also results in a duplication of effort.

Christman said most vendors have been combating these deficiencies over the past couple of years by providing users with:

- More powerful processors that will allow their users to handle more complex designs and analyses as well as support more terminals.

- Improved data base manage-

ment techniques that accommodate the implementation of integration solutions. "The creation of a shared data base is the backbone of this effort," Christman said.

- Increased distributive DP capabilities that will take care of the specific multilevel processing problems of both large and small corporations.

- Three-dimensional solid modeling offerings that will result in the production of more accurate and realistic representation of a solid object.

While most CAD/CAM vendors are working on such products, Christman wonders if the smaller vendors will still have their existing customers to sell to by the time they implement this integrated approach.

Christman explained that CDC's CAD/CAM philosophy is to build on what its customers already have. The key element in the company's integration of CAD/CAM information is its Engineering Design Library (EDL), which permits large amounts of data to be stored in one data base that is accessible by engineers, managers and administrators. "The Engineering Design Library serves as an interface to the user. It manages data and passes it along," Christman said.

Christman contends that one of the major advantages his firm has over IBM is the number of ways it can deliver CAD/CAM products and services. One way is through the company's five applications centers that have opened over the past year.

Another method of delivering services to its customers is through its Cybernet network. Christman said users can process jobs from workstations located on premises. Users of the time-sharing service that dial up or go through dedicated communications links are charged on an hourly or monthly basis. Hourly pricing starts at \$39.50.

According to Daratech, Inc., a marketing research firm located in Cambridge, Mass., CDC's CAD/CAM revenues for 1981 were approximately \$30 million. Christman said the company more than doubled that figure in 1982, and he expects 1983 revenues to be somewhere around \$90 million.

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With NAPLPS Protocol

IBM Adds Graphics to Series/1 Videotex System

RYE BROOK, N.Y. — IBM has enhanced its Series/1 Videotex System with the North American Presentation Level Protocol Syntax (NAPLPS) protocol, allowing it to display color graphics. The company also added teleconferencing capabilities to the system, as well as compatible programming aids.

The color graphics capa-

bilities are intended to extend the ease-of-use advantages of videotex into new business areas such as advertising and business forecasting and planning groups, according to the company.

The graphics capabilities allow users to select the graphics technique best suited for their individual applications. For example, graph-

ics requiring high-resolution, precise line drawings can be designed using an "alphageometric" technique that melds lines, points and curves to form picture-like patterns, a spokesman explained.

Less complex color graphics designs can be created using "alphamosaics," a technique employing tiny

rectangles gathered in a building-block fashion, forming mosaic patterns, the spokesman explained. Prestel-based alphamosaic images can be generated with an on-line editor program at designated videotex terminals, including the company's Personal Computer.

The programming aids make it easier for users to

write applications programs that access both local and remote nonvideotex data bases. With such programs, users can transmit inventory and stock status reports from a host computer like an IBM 3081 to videotex terminals scattered throughout sales and service offices.

The teleconferencing feature enables Series/1 users in one location to present information on new products or business procedures simultaneously on multiple videotex screens in other locations. While the visual information is being transmitted, voice communications can be conducted over normal telephone conference-call hookups.

A "billboard" capability permits continuous viewing of a sequence of information. Frames of information in a billboard advance automatically.

The Series/1 Videotex System Version 1.1 program carries a one-time charge of \$12,500 and will be available in the second quarter of 1984, IBM said from 900 King St., Rye Brook, N.Y. 10573

Compupro Announces Multipro

(Continued from Page 45)
word processor and a data base management system.

According to Compupro President William Godbout, the Model MP 10 will be aimed at organizations that have been using personal computers to run applications and have created data bases they want to run on more powerful systems.

"We see Multipro as the forerunner of several computer configurations that can be expanded into entire networks of multiuser systems," Godbout explained. He added that by using both 8- and 16-bit microprocessors, his firm can offer a "higher price/performance ratio and make multiuser multiprocessing capability available to a wider audience."

Hardware options for the system include a math coprocessor priced at \$495; the company's 4M-byte M-Drive/H disk emulator, which costs \$15,950; and mass storage options, including an external 2.8M-byte floppy drive subsystem for \$2,395.

Priced at \$4,995, the Model MP 10 will be available in volume by October of this year. Compupro is located at 3506 Breakwater Court, Hayward, Calif. 94545.

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Weighing In at 18 Lb

Portable Systel I Debuts

SAN JOSE, Calif. — Systel Computers, Inc. has introduced a full-featured portable word and number processor with a detached keyboard and printer interface module.

The Systel I is said to be portable and features a 10-in. CRT with a 5¼-in. disk drive. The unit weighs 18 lb and includes a carrying handle.

Documents reportedly can be transmitted anywhere using an optional communication link that connects to other computers, word processors, terminals or external modems.

The Systel I's printer interface module enables the unit to connect with printers, a vendor spokesman said.

The unit is priced at under \$2,000, according to the vendor. More information is available from Systel Computers, located at 399 W. Trimble Road, San Jose, Calif. 95131.

Daisywheel Offers Compatibility

BELLEVUE, Wash. — Transtar has introduced a daisywheel printer that features compatibility with major word processing software.

The Model 120 uses existing routines for boldface, underscore, superscript and subscript printing, letter quality printing at 14 char./sec and switch-selectable spacing at 10, 12 and 15 char./in.

The Model 120 includes an auto-

SAN FRANCISCO — CPT Corp. has announced a spelling package that reportedly verifies words as they are typed and checks documents after they are recorded.

The CPT Spelling Verifier uses a

72,000-word electronic dictionary that is said to provide better than 99% accuracy on all general applications.

The spelling verifier also provides for additional customized word lists of up to 1,500 words each. The customized lists can be typed and recorded, or added directly from text as it is being verified.

The system also reportedly recognizes and checks for capitalization and hyphenation. Additional features include instant reverification of words after they are corrected and the ability to store and use consecutively any number of customized word lists.

The spelling verifier runs concurrently with existing CPT word processing features and is available on CPT 8100 and 8500 Series computer systems.

The spelling verifier costs \$500. More information is available from CPT Corp. at 8100 Mitchell Road, Box 295, Minneapolis, Minn. 55440.

CRT Shield Protects Eyes

NEW YORK — Langley-St. Clair Instrumentation Systems has unveiled an anti-eye-fatigue screen for CRT terminals. The anti-eye-fatigue screen shield reportedly is made of the same lead-impregnated acrylic plastic used for windows in nuclear plants and hospital X-ray rooms.

The Eye Guard is a 7mm-thick sheet of transparent plastic that contains 30% lead by weight to offer antiradiation properties and affixes to the front of a computer terminal with Velcro tabs. The front surface is covered with a nylon-netting anti-glare screen, the vendor said.

The Eye Guard is priced at \$129.95 and is guaranteed to stop "the worst case of eye fatigue," according to Langley-St. Clair, located at 132 W. 24th St., New York, N.Y. 10011.

Sperrylink Desk Station Enhanced

(Continued from Page 49)

tem, VS and other Wang word processing equipment.

Compatibility with the IBM Displaywriter and Office System 6 is also provided, according to the Sperry spokesman.

The basic price of a Sperrylink Desk Station is \$3,530. A typical clustered system serving a department of 15 end users would average \$8,552 per workstation, including such units as a Distributed Processor, Desk Station, diskette, printers and appropriate software, the vendor said.

A 32-person department with the same type of clustered configuration reportedly would cost an average of \$7,893 per workstation.

The Document Reader is available for \$9,500 for each type of word processor connection.

More information is available from Sperry, through P.O. Box 500, Blue Bell, Pa. 19424.



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New Rules Ease High-Tech Trade With China

By Bill Laberis
CW Staff

WASHINGTON, D.C. — It was a combination of politics and business sense that prompted the Reagan administration late last month to liberalize the ground rules for the export of U.S.-made high-technology equipment to China.

While U.S. computer equipment vendors are still taking stock of the rules change, it is clear that the administration move will meet with overwhelming approval within the industry.

Said a spokesman for one U.S. company, "We're a little cautious about saying anything at this point. But I can honestly say we're excited as hell. There's a huge potential market in China. Just think of the numbers of people and where they're at with computer technology."

Indeed, China lags years if not decades behind industrialized Western countries in terms of computer resources. Last year, for the first time, the Chinese government used DP to take its census. Of the 30 IBM computers used to count the one-billion-plus heads in China, 21



Analysis

CPUs were donated by the United Nations.

But the recent easing of export regulations, coupled with China's aggressive modernization drive, may radically change the state of DP throughout the country. And many U.S. vendors, especially IBM and plug-compatible manufacturers (PCMs), stand to profit as a result.

The change in Commerce Department

rules allows for the export to China of so-called dual-purpose high-technology equipment. Much of the exports falling into this category are either computer equipment of machinery or manufactured computers and their components.

China, henceforth, will be placed in an export category that bars the sale of military equipment, but allows vendors to assume they can export their wares unless told to do otherwise. Formerly, computer equipment vendors assumed they could not export any items to China unless informed to the contrary, a mirror image of the new rules.

Published reports predicted the new rules will increase U.S. exports to China by up to \$2 billion, with most of this increase coming from sales of computers, semiconductors and telecommunications equipment.

The Commerce Department, which has battled the Defense Department for more liberal export rules, has claimed that China's greatest DP needs are in the education, not military, area. Honeywell,

(Continued on Page 54)



CW Photo by P. Glinn

John Imlay

Computeristics Gets \$6 Million

MSA to Buy Software Division

ATLANTA — Management Science America, Inc. (MSA) has signed an agreement to acquire the software division of Computeristics, Inc., a Hamden, Conn.-based firm specializing in accounts receivable and order processing software for IBM mainframes.

The \$6 million deal will add Computeristics' Customorder order processing system to MSA's line of manufacturing software and merge features of the Computeristics' accounts receivable package with MSA's accounts receivable product, according to John Imlay, chairman of the board of MSA.

The agreement continues MSA's penetration of new markets through acquisition. Early last year, the company entered the manufacturing software field by ac-

'MSA has been actively looking to strengthen its customer base in the field of material requirements planning (MRP) . . . [a gap] the Computeristics acquisition will help to fill.'

quiring Arista Manufacturing Systems, the manufacturing software division of Xerox Corp.

MSA has been actively looking to strengthen its customer base in the field of material requirements planning (MRP), a planning system which is the backbone of manufacturing systems. An integrated order processing and accounts receivable system is "a vital part of MRP," which the Computeristics acquisition will help to fill, Imlay said. MSA currently has about 100 MRP customers.

Computeristics' planned sales for 1983 were about \$4 million, Imlay said. "[Computeristics'] products will be put out to our market force, and sales [of those packages] should exceed \$10 million over the next 12 to 18 months," he predicted.

MSA had been working on an order entry package of its own, "but we looked at

(Continued on Page 52)

National Semi Reverses Trend, Reports \$7.7 Million Profit

SANTA CLARA, Calif. — Bolstered by a strong performance in its semiconductor division, National Semiconductor Corp. has reported a \$7.7 million fourth-quarter profit on sales of \$321 million, reversing a trend of quarterly losses.

For the year, National Semi posted a \$14 million loss on sales of \$1.2 billion, compared with a net loss of \$11 million on sales of \$1.1 billion in fiscal 1982. The company's fourth-quarter earnings reflected a nearly \$3 million after-tax gain resulting from the settlement of an insurance claim that began five years ago. The quarter's results also reflected the performance of recently acquired Data Terminal Systems, Inc. (DTS), which posted a "modest loss" on sales of nearly \$19 million, the company said.

Commenting on the results, Charles Sporck, president and chief executive officer, said DTS' Datachecker and National Advanced Systems, Inc., National Semi's wholly owned systems subsidiary, both attained record sales levels. The semiconductor division, he said, "ended the fiscal

year with strong order rates resulting in lengthening of lead times and a strengthening of prices for some products," despite continued price erosion for many semiconductor offerings.

Intel Forges Bus Consortium

HILLSBORO, Ore. — In a move designed to speed the process of industry standardization, Intel Corp. has forged a 13-company consortium to develop the specifications for a new microprocessor data bus.

The bus — which acts as an informational pathway between the central processor and the computer's peripherals — will be called Multibus II, based on an architecture to meet the needs of advanced 8-, 16- and 32-bit microprocessor-based systems, a spokesman said.

Intel said it expects to publish Multibus II specifications later this year, while providing review materials to the recently formed Multibus Manufacturers Group,

an independent organization of vendors supplying Multibus-compatible products and services.

The company's earlier Multibus architecture, IEEE 796, has been adopted by more than 150 electronics companies supplying more than 1,000 separate Multibus-compatible products, Intel claimed.

U.S. and foreign companies joining Intel as members of the consortium include: Advanced Micro Devices, Inc.; Nixdorf Computer Corp.; Intersil Systems, Inc.; Zilog, Inc.; Hewlett-Packard Co.; Tektronix, Inc.; International Computers Ltd.; Siemens AG; Mupac Corp.; Matra Co.; Compagnie des Machines Bull and Dataindustri AB.

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Cary Retires; Ends 35 Years As IBM Exec

ARMONK, N.Y. — Frank T. Cary, who led IBM through lean years in the late 1970s to the relative prosperity it enjoys today, officially retired as an IBMer last week. He will continue as chairman of the executive committee of the company's board of directors.

Cary began with IBM as a marketing representative in Los Angeles 35 years ago and was subsequently named president and general manager of the Data Processing Group. He was elected to the board of directors in 1968 and became president in 1971 and chairman in 1973.

Commenting on Cary's departure, John Opel, chairman and chief executive officer, said, "As a business leader and strategist, Frank Cary had no peer. He guided us to the substantial success we have enjoyed, and he laid the foundation for our success in the future."

MSA Agrees To Acquire Division

(Continued from Page 51) Computeristics' and were smitten by their research and development and technology," Imlay said.

Current Computeristics customers will be supported by MSA. MSA will market both companies' accounts receivable packages for the next 30 days and then integrate them into a single product, with upgrades available to users sometime this year, according to MSA's chairman.

MSA will absorb the 62 Computeristics employees and will continue to support Computeristics' customers. Computeristics' President James H. Chambers will become director of MSA's customer service division, Imlay said.

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			Region of U.S.			
			North Central	Northeast	South	West
City Size Over 500000	Quantity	Total	17057	15045	13277	12603
		\$ Amount	26757.94	24040.36	18853.55	16777.59
		Percent of Regional Sales	55.8	42.9	47.4	50.8
50000 to 500000	Quantity	Total	9012	13509	13280	11605
		\$ Amount	13787.06	22071.22	20954.00	14210.25
		Percent of Regional Sales	28.7	39.4	52.6	43.0
Under 50000	Quantity	Total	4048	5131	None	1811
		\$ Amount	7428.34	9944.05	None	2034.05
		Percent of Regional Sales	15.5	17.7	None	6.2

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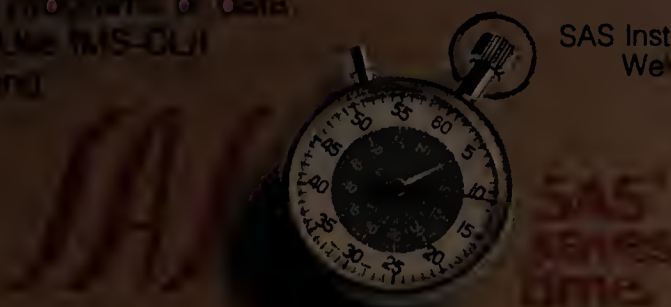
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Birth Pangs of U.S.-China Tech Trade Diagnosed

By Bill Laberis
CW Staff

While the market potential for U.S. computer vendors is indeed great in China, so too are the potential problems that carry the warning "seller beware."

Perhaps the greatest problem U.S. vendors will face in China, now that

Export Rules To Ease Trade With Chinese

(Continued from Page 51)

Inc. has been awaiting an export license to ship its computers worth more than \$15 million earmarked for educational programs in China.

But other observers claim the self-sufficient Chinese are more interested in building their own technological infrastructure and will hotly pursue the acquisition of semiconductors and chip manufacturing equipment. This is precisely the type of goods which U.S. agents have seized in raids in recent years from smugglers employed by Eastern Bloc nations and the USSR. Thus, there is speculation that the Defense Department will attempt to stonewall the new export rules by broadly defining what it considers militarily sensitive exports.

The Defense Department's blocking efforts notwithstanding, the Chinese appear determined to develop their own computer manufacturing capability, with or without American exports. According to one ranking Chinese official, China's efforts should be directed toward developing PCM-like technology.

In an article that appeared earlier this year in *China Computerworld*, Chen Renfu, deputy director of Huadong Institute of Computing Technology in Shanghai, said, "China should pay more attention to developing PCM technology... IBM's and [the] PCM's computers... have the most complete software for a wide range of applications."

STC, Dupont Join Forces

LOUISVILLE, Colo. — Storage Technology Corp. (STC) has entered into a joint development agreement with Du Pont Co. for the refinement of STC's optical laser recording media and its process for large-scale production of that media, the company announced recently.

STC, which has been stung by successive quarters of earnings slippage, has touted optical technology as one of the product lines it hopes will sustain future growth. Optical laser recording media is the component of a high-density optical storage subsystem which records data.

STC's optical laser data storage subsystem is slated for initial shipment later this year. The joint development venture will enable the company to utilize Du Pont's expertise in materials and process manufacturing to ease STC's transition to full-scale production of the media, STC said.

trade restrictions have been eased (see story on Page 51), is associated with their newness to that vast market.

European and Japanese counterparts, meanwhile, already have a toe-hold in the Chinese market and thus are more familiar with the nuances of doing business there. According to the *EDP China Report*, one of the few English language newsletters of the Chinese DP industry, "It is a fact that the U.S. electronics industry has failed to complete a lot of sales when trading with China because of the stupid policy followed by the U.S. government."

While those policies have apparently changed now, other problems will linger. U.S. vendors must identi-

fy the end users in China's fledgling computer sector, determine their needs and then seek out the party or parties who make the purchase decisions.

Further, China's planners, while aware of their country's pressing needs to computerize, want to develop a technological infrastructure in a nation where the basic means of production across the board are backward, the *China Report* has stated. Thus, those U.S. vendors selling semiconductor manufacturing and systems testing equipment will have to be particularly patient with a nation that still performs many complex industrial procedures by hand.

On the other hand, the stated willingness of the Chinese to modernize

and sustain its billion-plus people bodes well for U.S. computer vendors, given the country's unique problems. Last March, China's first computer users group, the Chinese Computer Users Association, was inaugurated.

The association is a nationwide organization consisting of users, manufacturers, research institutes and service centers. Its aim is to "protect the rights and interests of users, strengthen the ties among users and between the users on the one hand, and the research institutes and manufacturers on the other, promote cooperation and experienced exchanges and raise the efficiency of computer applications," the *China Report* noted.

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Charges Copyright Infringement

Micropro Files Suit Against United Computer

SAN FRANCISCO — Micropro International Corp. is suing United Computer Corp. of Culver City, Calif., claiming the software leasing firm is renting Micropro software packages and allowing users to copy them.

The suit, filed last month in U.S. District Court here, charged that United Computer has infringed on Micropro's copyright and distribution rights and has contributed to the unauthorized reproduction of Micropro's line of microcomputer software, including the firm's Wordstar word processing package.

The suit further charged United Computer with engaging in unfair

competition with Micropro, according to attorney Ron Laurie. Laurie is with the San Francisco law firm of Townsend and Townsend, which is representing Micropro.

Named as defendants in the suit were United Computer President S. Gerald Stone and three other company principals: H. George Pollack, Robert Pollack and Norma Pollack. Repeated attempts by *Computerworld* to reach the defendants were unsuccessful.

Micropro is asking for punitive damages of \$10 million from United Computer and \$1 million from each of the defendants. In addition, Micropro is asking for \$50,000 for each

copyright infringement. However, the suit did not state how many infringements there have been.

The suit charges United Computer with buying Micropro software products, removing a printed license agreement Micropro supplies with each diskette it sells, repackaging the diskette and renting the software to the public.

Furthermore, according to the suit, the license agreement, which Micropro claims United Computer has removed, states that the user of the package cannot copy the package except for archival purposes and that the software is the property of Micropro. The license agreement further

states that use of the package is limited to one processor, the suit said.

"The defendants have devised, set up and conducted their software rental business in the belief and with the knowledge that the great majority of their customers will unlawfully copy the rented software and return it to the defendants prior to, or at the end of, the one-week rental period," the suit charged.

The case will be heard by Judge William Schwarzer, who presided at a similar Micropro case last fall in which Micropro and Digital Research, Inc. were jointly awarded \$250,000 in a suit charging Dataforce International and its subsidiary, Data Equipment, Inc., with illegally copying the firms' software programs.

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VP Leaves Tandy To Become Head Of Microsoft

BELLEVUE, Wash. — The man who spent 25 years helping build Tandy Corp. into the largest retailer of microcomputers has left that company to become president of Microsoft, Inc., developer of the Xenix and MS-DOS operating systems.

Jon Shirley, 45, will fill the slot vacated last month by James C. Towne, who left after a year at Microsoft subsequent to a falling-out with William Gates, the company's chief executive officer.

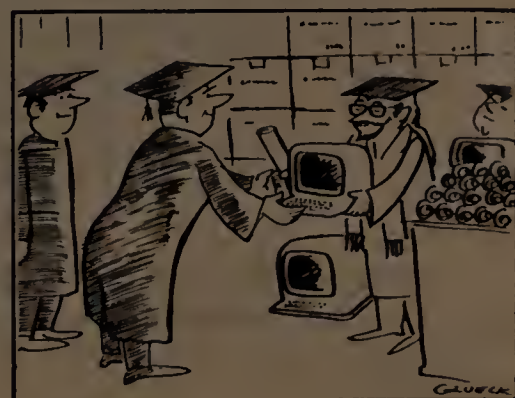
Commenting on his appointment, Shirley, who stepped down as Tandy's vice-president of computer merchandising, said, "The decision to make this career change was a difficult one, but I consider this a once in a lifetime opportunity."

DG Earnings Up 23% for Quarter

WESTBORO, Mass. — Data General Corp. posted profits of \$4.3 million or 36 cents per share for its most recent quarter, a 23% earnings gain over the same quarter a year ago.

Revenues in the quarter were flat, however, totaling \$189 million. The company reported that orders "are being delayed at senior administrative levels due to hesitations about the pace of the general economic recovery and tight controls on operating capital budgets."

The firm has shipped "a significant number" of its MV/10000 high-end superminicomputers, according to Edson de Castro, DG's president and chief executive officer.



Litigator Defines Monopolistic 'Tie-In' Violation

By Patricia Keefe
CW Staff

BOSTON — In computer industry antitrust litigation, to what length must the prosecution go to prove monopolistic behavior involving so-called "tie-in" violations on the part of a vendor?

According to Richard A. Horning, an antitrust litigator, the prosecution must first prove the existence of two products where the purchase of one product is conditioned upon the purchase of the second product. It must further be shown that the vendor has sufficient economic ability in the "tying" market to restrain competition in the "tied" market.

Horning, a partner in the law firm of Ream, Train, Horning, Ellison &

Roskoph of San Francisco, made his remarks at a recent meeting of the Boston Computer Law Association.

While economists hold that the only time a company can impose a tie-in in one market is when it has a monopoly in another, "the courts have yet to come to grips with that issue," Horning said.

What the courts have decided, however, is that the presumption that copyright and patent ownership gives rise to a mythical power to impose a tie-in is rebuttable, as evidenced in the recent antitrust litigation involving Data General Corp., he said. The court found that "other companies are free, notwithstanding the copyright, to develop their own comparable product," Horning said.

Patents are a little trickier, he added, because they literally prevent others from repeating the initial effort.

"The question here is how one uses those rights — whether those rights are used to improperly extend powers conferred by those rights into another market," he explained.

Horning cited the 1936 IBM Tabulator case as an example. Although IBM held a legitimate patent on its machine, it used its "legitimate monopoly" to force customers to purchase an undesired product in a separate market — high-priced punched cards.

Other elements related to tie-in violations, he said, as summarized from recent Data General Corp. antitrust litigation, include:

- A substantial amount of commerce in the tied product market must be affected.
- Plaintiffs must prove some actual injury that is causally linked to the antitrust violation.
- Some courts have required that the seller of the tying product have an economic interest in the tied product.

McGill Named To Trilogy Board

NEW YORK — Archie J. McGill, former president of American Bell, Inc.'s Advanced Information Systems (AIS), has been named a member of Trilogy Ltd.'s board of directors, according to a recent announcement by Gene Amdahl, Trilogy's president.

McGill resigned from AIS last month [CW, June 13].

In announcing McGill's appointment to the Trilogy board, Amdahl said, "Archie McGill brings to Trilogy significant expertise in all aspects of the information processing industry and will make an important contribution in assisting Trilogy in developing its strategic direction."

McGill is also president and chief executive officer of Rothschild Ventures, Inc. and managing director of the firm's parent company, L.H. Rothschild, Inc.



CW Photo by P. Keefe
Richard A. Horning

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Attorney Draws Antitrust Litigation Bottom Line

By Patricia Keefe
CW Staff

BOSTON — The bottom line in antitrust litigation is "the issue of whether one views antitrust law as based upon the protection of the economy or as having the social context of protecting small businessmen," according to Richard A. Horning, a computer law attorney.

Horning, who spoke at a recent meeting of the Boston Bar Association's Computer Law Forum, detailed his views on antitrust litigation involving IBM and AT&T.

"The IBM case was untenable from the start," Horning said, adding that consistency in defining the market as held by IBM was a problem.

The antitrust suit was filed in the last days of the Johnson administration, and there was a commitment within the Justice Department to carry the case forward.

"Until [Assistant U.S. Attorney] General Baxter came along, no one had taken a hard look at this thing they were prosecuting to see if it was in the interest of the country, both in terms of the U.S. economy and in an international setting," he said.

He cited the case of U.S. District Court Judge David N. Edelstein, who he said had "invested a fair amount of time" in the case and "did not want to let it go," despite a request from IBM that he disqualify himself from post-trial hearings [CW, May 24, 1982].

How the IBM case and antitrust in general have been pursued has varied under different presidents' administrations. Baxter, under the Reagan administration, looked at the IBM case from the "standpoint of 'what is solid economic policy for the country as a whole?'" Horning said, and "bigness is not badness per se." Horning compared Baxter to Thurmond Arnold, his predecessor in the 1940s, who believed "big is bad" and that smaller businesses, "farmers and mechanics," must be protected.

Where the AT&T vs. the Justice Department antitrust case was settled out of court, Horning said the question now "is whether things are better off." Economic analyses of communities where the phone company

experienced competition have shown that on the whole, consumers seem to have benefited, he said.

In addition to inducing competition in the long lines arena, the breakup of AT&T "represents an enormous potential force in the computer industry," Horning said.

Horning also addressed the Microelectronics and Computer Technology Corp. (MCC) [CW, Jan. 31], a multivendor research and development consortium. MCC has received the Justice Department's blessing, which likely rules out any government-initiated antitrust actions. Horning said there are bills pending in Congress that would further immunize the consortium against antitrust suits filed by private parties.

Supershots

Dataguard, a division of Novo Communications, Inc., has established a facility in Framingham, Mass., that will offer high-security data storage and retrieval services for companies within a 50-mile radius. Operations are scheduled to begin July 1.

Teknekron Industries, Inc. has completed the purchase of **Data-point Corp.**'s Communication Management Division. The division will continue as a new company, Teknekron Infoswitch.

Honeywell, Inc. has established a new center for the sale of digital integrated circuits to outside customers. The Digital Products Center, headquartered in Colorado Springs, Colo., and part of the Semiconductor Group, will sell custom, semicustom and noncommodity products.

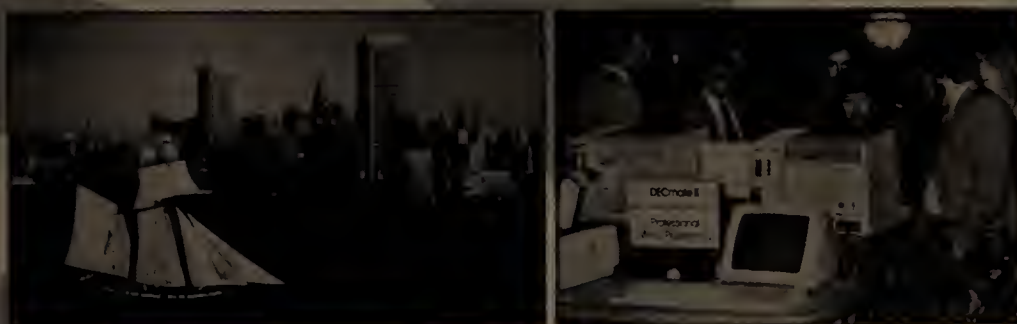
The Advanced Technology Development Center of the Georgia Institute of Technology and the Georgia Tech Alumni Association are sponsoring the **Atlanta High-Technology Venture Capital Conference**, Oct. 13 and 14, at the Peachtree Plaza Hotel, Atlanta. Details of the conference are available from Bettye Parker, Department of Continuing Education, Georgia Institute of Technology, Atlanta, Ga. 30332.

Gould, Inc. has reached an agreement with **Intel Corp.** to make and supply the uninterruptible power systems for Intel's Fast-3825 semiconductor disk system.

Comdisco Disaster Recovery Services, Inc. (CDRS), a subsidiary of Comdisco, Inc., has announced a business arrangement with **EMX Telecom**, a partnership between Mitel, Inc. and American Satellite Co., under which EMX Telecom will provide communications capabilities beginning in 1984 to support CDRS' disaster recovery services.

Digital Equipment Corp. and **VSLI Technology, Inc.** (VTI) have signed a cooperative agreement to market Digital's VAX superminicomputers and software developed by VTI for VSLI design.

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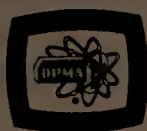


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The issue date for the *Computerworld Buyer's Guide to Computer Systems* is August 24. Advertising space close is July 8. Watch for the additional guides from *Computerworld* in 1983: *Terminals & Peripherals* and *Software*.

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Forecasts & Findings

'Nuke Fear' to Spur Optics

Fears of a major disruption of national communications networks in the event of a nuclear war are expected to spur tremendous growth in the fiber-optic cable market, which is expected to be worth over \$2 billion in 1992, according to **Fiber Optic Markets**, by International Resource Development, Inc. (IRD).

A major reason behind this growth is said to be encouragement from the U.S. defense establishment due to concern over electromagnetic pulse (EMP), an effect of a nuclear explosion which reportedly can render military communications, electronic power grids and civilian phone systems useless during a nuclear war. However, fiber-optic cable devices could have the effect of arresting the EMP surge before it could create any damage. In addition, fiber optics systems have plenty of transmission capacity, will become cheaper to install, offer small size, weight and indefinite service life and can be buried underground, offering another line of defense against EMP, IRD said.

The report (No. 557) is available for \$985 from IRD, 30 High St., Norwalk, Conn. 06851.

Videodisk Mart to Explode

The market for read-only videodisks is expected to reach an installed base of \$5.9 billion between now and 1990. For read/write systems, an installed base of \$1 billion in optical disk drives for data storage by 1990 is predicted, while optical imaging systems are expected to generate sales of \$1 billion in 1990 alone (15% of the total 1990 micrographics market), according to **Optical Disc Systems**, by the Yankee Group.

Due to problems of quality control and overstated sales projections, the videodisk has stumbled in its early market years, the report said. But over the last year, it has shown "some promising signs" of recovery. The consumer market and industrial training and merchandising marts offer the largest potential for sales, according to the Yankee Group. The optical disk is expected to function primarily as a replacement for magnetic tape in data processing environments, offering the advantage of on-line mass storage. Also, the report predicts that optical disk drives will not be fully plug-compatible peripherals until 1986. Optical systems reportedly will replace computer output microfilm and computer-aided retrieval systems by almost 40% of annual sales by 1990.

Divided into two parts, **Video-discs and Optical Data Disc Systems**, priced at \$1,950 each, the study is available from the Yankee Group, located at 89 Broad St., 14th Floor, Boston, Mass. 02110.

Electronic Info Growth 23%

The gross distribution revenues in the North American market for the electronic sale of information was \$1.047 billion last year, and an overall industry growth rate averaging 22.8% can be expected for the next five years with the aggregate market exceeding \$2.9 billion in 1987, ac-

cording to **Electronic Information Industry Forecast: North America**, by Link Resources Corp.

These findings show an increase in overall distribution revenue of 14.6% per year — up from \$796.5 million in 1980. Business information accounted for 76.8% of the total distribution revenues in 1982 and is expected to grow at an average annual rate of 20.6%, reaching \$2.062 billion in 1987. Professional information services follows with 13.6% (\$142.3 million) of the total in 1982, reaching \$476.4 million in 1987. Science and technical information and library support services accounted for another 8.2% (\$85.6 million) of the total, which is expected to reach \$178.5 million in 1987.

Nonclient companies can purchase the report for \$2,000 from Link Resources, 215 Park Ave. S., New York, N.Y. 10003.

Services Mart Untapped

The market for on-line information services is still largely untapped in many business/occupational categories, according to **Business Users of Electronic Information Services**, by the Link Consulting Group. The average penetration of electronic information services across a total user sample containing nine occupational categories in three major industrial groups is estimated at between 10% and 15%.

The greatest information service

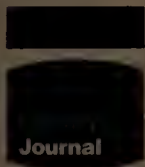
use was found among lawyers in firms where 42.5% employ some form of on-line service. Brokers report the highest average 1982 departmental budgets for data base services at \$59,000, while the lowest budget was reported among company lawyers, averaging \$17,000. Both brokers and lawyers consider system reliability the most important aspect of data base service, while quality of information was rated most important among the other occupational categories. Although the 1982 mean budget was \$45,000, 1983 estimates were lowered to a mean of \$38,000. This decrease is attributed to both the tight economy prevailing during the course of the survey and a general

(Continued on Page 61)



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Communication Networks: Alternatives for the '80s.

In five 20-30 minute color video sessions, you'll hear from industry experts FCC Chairman Mark Fowler, American Bell/AIS President Arch McGill and Dr. Dixon Doll, along with others, sharing their insights on topics such as short-haul microwave, PBX technology, communications processors and satellite technology.

Local Area Networks: The Major Considerations.

In this Conference Journal, data communications pioneer Dr. John McQuillan is joined by Diana Last and Drs. Kenneth Thurber and Howard Frank. Four video sessions focus on the capabilities and architectures of LAN communications: the baseband vs. broadband debate, choosing the best system for your needs, flow control, and diagnostic network monitoring.

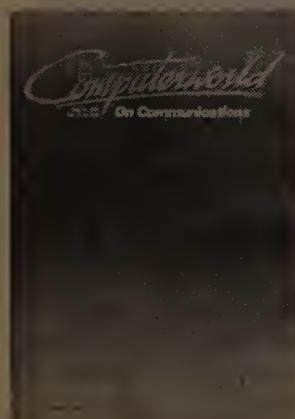
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- D. Communications Systems
- E. Office Automation Systems

Forecast & Findings

(Continued from Page 59)

estimates. Also by 1992, the keyboard will have become the center of office activity as one of every two white-collar workers will have a computer. It is estimated that in contrast to the \$2,500 spent per worker for computer equipment in 1982, that figure will increase to \$9,000 in 1992. Sales

will include CRT terminals, personal computers (3.2 million units in 1987) and word processors, where a change in emphasis is expected from the stand-alone unit to cluster systems.

The report (No. G-057) is priced at \$975, available from BCC through P.O. Box 2070C, 9 Viaduct Road, Stamford, Conn. 06906.

Desktop Faxes to Blossom

High-speed desktop machines will be the fastest-growing segment of the facsimile equipment market, with about 25% annual real growth projected through 1987, according to **Facsimile Equipment Market**, by Frost & Sullivan, Inc. However, with some models leasing for well under \$150/mo, market profitability is said to be rapidly shrinking.

Overall, the \$389 million (1982 sales) facsimile industry, which once promised the same kind of quantum growth that the copier business has experienced, has fallen short of expectations primarily due to leasing policies, the report said. Currently,

the industry leases more than 75% of its new machines, and despite efforts to get customers to buy, rapidly changing technology along with high interest rates reportedly have made leasing more appealing. Also, by 1987, high-speed units are expected to garner 56% of the market with Japan leading the way, as it does now in most of the facsimile industry. Further, the study states that the future of the industry "lies primarily in stand-alone machines and networks sending business documents to other similar machines."

The report (No. 951) costs \$1,350 from Frost and Sullivan, Customer Service, 106 Fulton St., New York, N.Y. 10038.

Executive Corner

• **Arthur Honegger** has been named president of Data Magnetics Co.

• **Dr. Jerrold A. Heller** has been promoted to senior vice-president, video products, at M/A-COM Linkabit, Inc., a subsidiary of M/A-COM, Inc.

• **Dieter E.A. Tannenberg**, president of the Multigraphics Division at AM International, Inc., has been named a senior vice-president of the company.

• **Harold F. Enright Jr.** has been named president of the Computer Aided Design and Manufacturing Business Group at Prime Computer, Inc.

• **John Garcia** has been promoted to vice-president of software at Data-soft, Inc.

• **William W. Chorske**, senior vice-president, Data Systems Group, has been named group executive, Optical Group, and **James K. Sims**, vice-president and general manager of the Sales and Service Division, has been appointed group executive, Data Systems Group, at Perkin-Elmer Corp.

• **Stephen N. Bowen** has been named vice-president, communications, at NCR Corp. **William J. Gotschall**, president of NCR Comten, Inc., has been named a vice-president of NCR Corp.

• **Zentec Corp.** has announced the appointment of four senior vice-presidents. They are: **Lawrence G. Finch**, product management and engineering; **Neal Dempsey**, marketing; **Jeffrey Thwaite**, operations;

and **Tim Conley**, finance and administration.

• **Richard L. Henander** has been appointed vice-president of finance and chief financial officer at Intecom, Inc.

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Mergers & Acquisitions

Tymshare, Inc., Cupertino, Calif., has acquired **DMI Systems, Inc.** of Lyndhurst, N.J. Terms of the acquisition were not announced.

Planning Research Corp. (PRC) will purchase **Sterling Systems, Inc.** of McLean, Va., from its founder, **Robert L. Quinichett**, for an undisclosed amount of cash. Sterling Systems will be operated as a PRC subsidiary.

Automatic Data Processing, Inc. (ADP) will acquire **Computer Information Service, Inc.** of Chicago, Ill., for an undisclosed number of ADP shares of common stock.

AGS Computers, Inc. has completed the acquisition of **Disc, Inc.** of Baltimore, Md.

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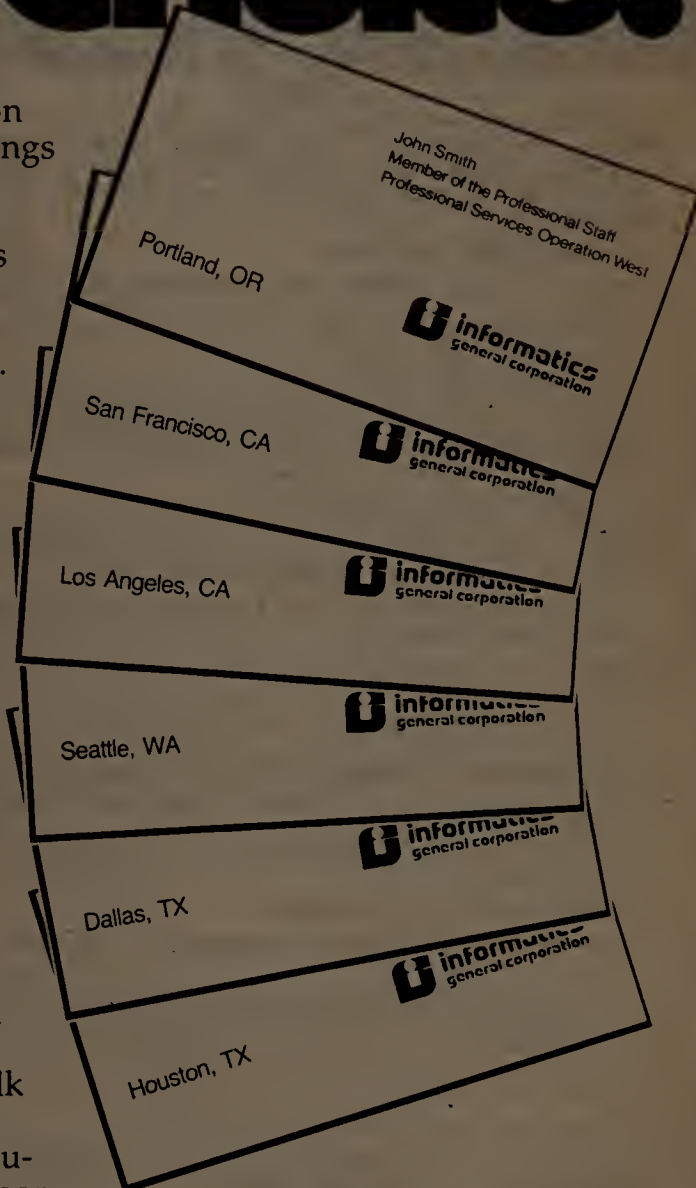
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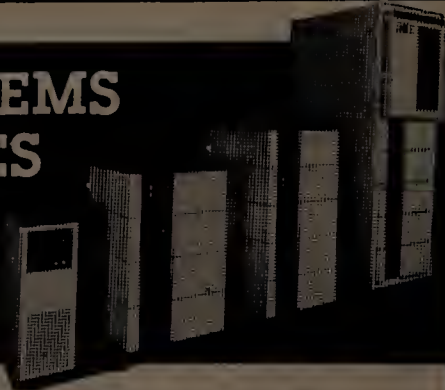
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Develop, implement & manage marketing programs for our new and existing product offerings, with key focus on the European Market. Includes market research, competitive analysis, advertising, promotion, and high level customer interface.

BA with 5-7 years experience, MBA preferred with 3-5 years experience. Marketing experience in commercial, general purpose or office automation mini/micro computer systems. Sales experience, bilingual capabilities, involvement in OEM promotional programs beneficial. Must be willing to travel overseas. Respond to Dept. R1.

Manager, Computer Engineering

Develop a new 32 bit supermicro family and enhancements of our existing 16 bit product line, including hardware architecture, CPU and subsystem design and firmware and diagnostics.

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Experience in UNIX required. BS/MS CS with 2-4 years experience. Respond to Dept. R5.

Language Development Engineers

Develop state of the art portable code generation techniques for our integrated family of compilers.

MSCS with 3-5 years design experience in practical, results-oriented implementations. Expertise in C required. Respond to Dept. R7.

Product Engineers

Manage the introduction of our new 16 and 32 bit supermicrocomputer products into manufacturing.

BSEE or equivalent plus 3-5 years experience.

Knowledge of agency requirements (UL, CSA, VDE and FCC) and microcomputers a must. Respond to Dept. R8.

Manager, Application Systems

A ground-floor opportunity to establish and define an integrated application software environment for Zilog system's 16 and 32 bit family of supermicrocomputers.

Also responsible for acquiring and qualifying 3rd party application packages.

Personal and microcomputer applications a must. Knowledge of C and UNIX a plus.

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MRP implementation experience a plus. Respond to Dept. R4.

Local Area Network Development Engineers

Join a team of senior developers in implementing local area networks for Zilog's current and future supermicrocomputers.

BS/MS EE or CS with 2-4 years experience. Specific experience with Ethernet a plus. Respond to Dept. R6.

Send your resume, including salary history, to the appropriate department listed, to **ZILOG, Professional Employment, 1315 Dell Avenue, Campbell, CA 95008**. An equal opportunity employer.

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Elmer Salazar
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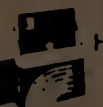
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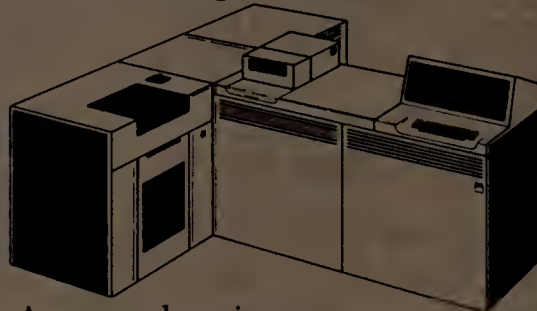
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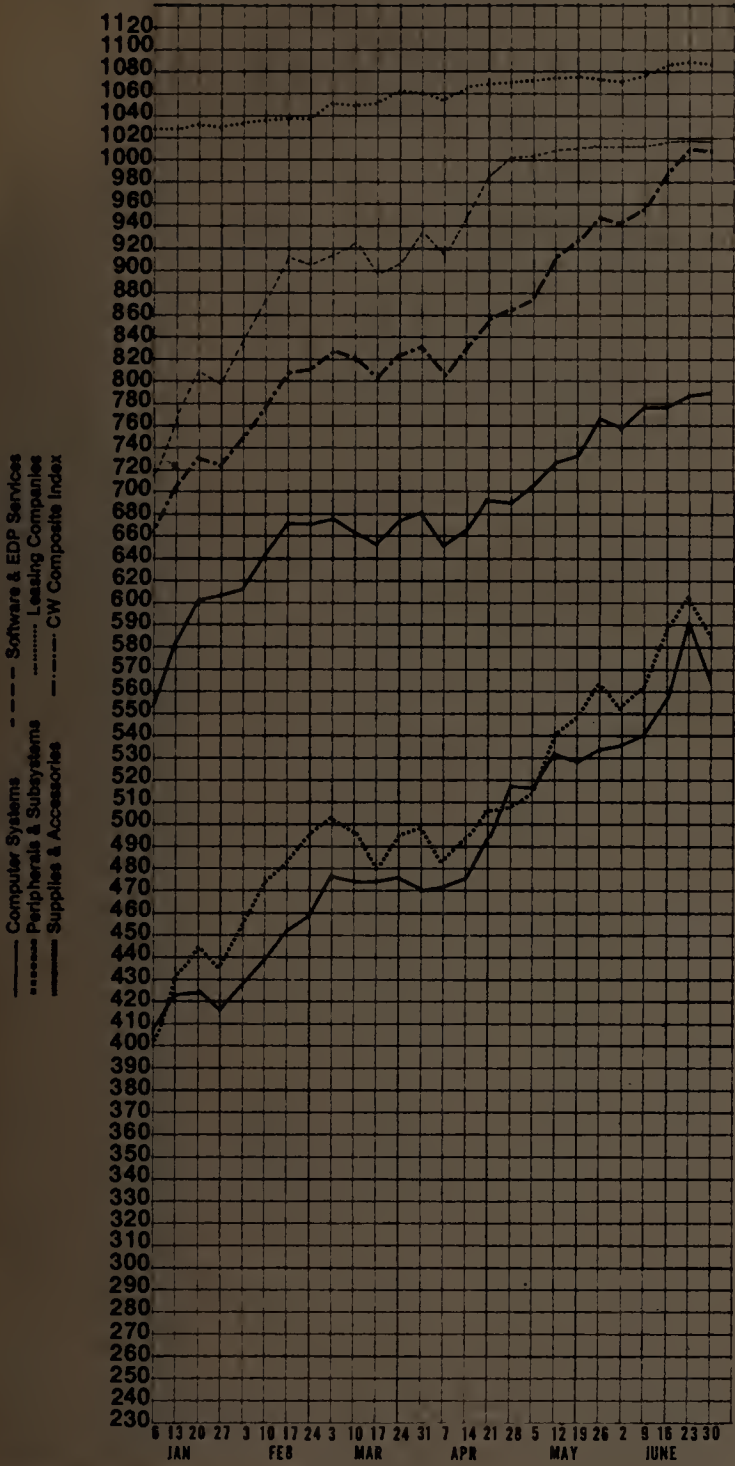
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Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, JUNE 29, 1983

All statistics compiled,
computed and formatted
by
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X C H		PRICE-----			
		1982-83	CLOSE	WEEK	WEEK
		RANGE	JUN 28	NET	PCT
		(1)	1983	CHNGE	CHNGE
COMPUTER SYSTEMS					
A	AMDAHL CORP	9- 30	26 3/8	- 3/4	-2.7
N	BURROUGHS CORP	28- 58	55 5/8	-1 3/8	-2.4
O	COMPUTER AUTOMATION	7- 17	15 1/2	+ 1/4	+1.6
A	COMPUTER CONSOLES	15- 47	48	+ 3/8	+0.8
N	CONTROL DATA CORP	21- 62	56 3/4	-2 3/8	-4.0
N	CRAY RESEARCH INC	20- 52	52 1/4	+8	+12.5
N	DATA GENERAL CORP	20- 73	57 1/8	-2 3/4	-4.5
N	DATAPoint CORP	11- 36	20 3/4	-1 1/8	-5.1
N	DIGITAL EQUIPMENT	82-132	118 5/8	-2 5/8	-2.1
A	EEOC INC	8- 15	13 3/4	- 1/2	-3.5
N	ELECTRONIC ASSOC.	5- 15	13 3/4	- 1/4	-1.7
N	FLOATING POINT SYST	18- 44	40 1/2	-1 3/8	-3.2
N	FOXBORO	22- 47	41 3/4	- 1/2	-1.1
O	FULCRUM COMP ORP	1- 3	1 1/4	0	0.0
O	GENERAL AUTOMATION	3- 18	14 5/8	- 1/2	-3.3
N	HARRIS CORP	20- 51	44 1/8	+1 1/2	+3.5
N	HEWLETT-PACKARD CO	36- 88	81 5/8	- 5/8	-0.6
N	HONEYWELL INC	80-124	114 1/2	-1 3/4	-1.5
N	IBM	57-124	120	-3 1/2	-2.8
O	IPL SYSTEMS INC	5- 14	12 3/4	0	0.0
O	MAGNUSON COMP SYSTS	2- 5	3	0	0.0
N	MANAGEMENT ASSIBT	7- 18	13 7/8	- 3/4	-5.1
O	MINI-COMPUTER BYST	1- 2	3 1/8	+1 1/8	+58.2
N	MODULAR COMPUTER BYS	8- 16	12 7/8	-2	-13.4
N	MOHAWK DATA BCI	10- 18	14 3/8	-1	-8.5
N	NCR	35-125	118 1/2	-3	-2.4
N	PERKIN-ELMER	17- 35	33 3/4	+ 3/4	+2.2
N	PRIME COMPUTER INC	11- 30	23 3/4	+1 5/8	+7.3
N	SPERRY CORP	21- 40	35 7/8	+3	+8.1
O	TANDEN COMPUTERS INC	14- 34	30	-2	-6.2
N	TEXAS INSTRUMENTS	71-178	119 7/8	+1 7/8	+1.5
A	WAND LABS "B"	13- 42	37 3/4	-2 5/8	-8.5
A	WAND LABS "C"	11- 42	38	- 3/4	-1.5

LEASING COMPANIES					
O	BOOTH FINANCIAL CP	22- 55	49	-3	-5.7
N	COMDISCO INC	7- 37	34 7/8	-2 3/8	-8.3
B	COMMERCE GROUP CORP	1- 1	1 1/4	0	0.0
O	COMPUTER INVSTRS GRP	1- 2	1/2	0	0.0
O	CONTINENTAL INFO BYS	5- 32	30	+ 1/4	+0.8
N	DPF INC	5- 14	13 3/8	+1 1/8	+0.5
O	ITEL	1- 3	1 1/8	0	0.0
O	LEASAPAC CORP	1- 2	1/8	0	0.0
N	U.S. LEASING	18- 47	42 1/4	+ 1/4	+0.5

EXCH: N=NEW YORK; A=AMERICAN; P=PACIFIC; B=BOSTON;
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(1) TO NEAREST DOLLAR

X C H		-----PRICE-----			
		1982-83	CLOSE	WEEK	WEEK
		RANGE	JUN 29	NET	PCT
		(1)	1983	CHNGE	CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 8	8	+2	+33.3
O	ADVANCED SYSTEMS INC	5- 30	30 1/4	+ 3/4	+2.5
O	AGS COMPUTERS INC	7- 25	26 7/8	-1 7/8	-6.5
O	AMERICAN SOFTWARE	22- 31	28	-2 3/4	-8.9
N	ANACOMP INC	8- 23	17 7/8	+1	+5.9
O	ANALYSTS INTL CORP	5- 20	16 1/4	-3 1/4	-16.6
A	APPLIED DATA RES.	8- 37	34 3/4	- 1/2	-1.4
O	ASK COMPUTER SYSTEMS	12- 36	34 1/4	0	0.0
B	ASTRADYNE COMP INC	1- 7	5 1/4	0	0.0
N	AUTOMATIC DATA PROC	21- 44	41 1/2	-2 1/8	-4.8
O	COA COMPUTER ASSOC	5- 15	12 3/4	-1 1/2	-10.5
O	COMPUTER ASSOC INT'L	6- 33	31 1/4	-1 1/4	-3.8
O	COMPUTER HORIZONS	8- 30	24 1/2	-5 1/4	-17.6
O	COMPUTER NETWORK	4- 10	10 7/8	+1	+10.5
N	COMPUTER SCIENCES	11- 23	18 7/8	- 3/4	-3.8
O	COMPUTER TASK GROUP	8- 22	17 1/2	-1 3/4	-8.0
O	COMPUTER USAGE	2- 22	18 3/4	- 1/2	-2.4
O	COMPUTONE SYSTEMS	15- 38	19 1/2	-2 1/2	-11.3
O	COMSERV CORP	10- 20	12 1/2	-1 3/4	-12.2
O	COMSHARE	8- 13	11 1/2	- 1/2	-4.1

N	CULLINET SOFTWARE	12- 50	43 1/2	- 1/2	-1.1
O	CYCARE SYSTEMS INC	5- 27	23 1/4	+ 1/4	+1.0
O	DATA DIMENSIONS INC	1- 2	3/4	0	0.0
O	DATATAB	0- 2	1 1/4	+ 1/4	+25.0
O	QVATRON CORP	2- 4	3 1/4	- 1/8	-3.7
N	ELECTRONIC DATA BYST	10- 42	37	-3	-7.5
N	INFORMATICS INC	10- 34	27 1/8	-1 1/4	-4.4
O	INSYTE CORP	1- 3	1 5/8	0	0.0
O	IPS COMPUTER MARKET	1- 2	1 1/8	0	0.0
O	KEANE ASSOCIATES	4- 15	14 1/2	+4	+38.0
A	LOGICON	12- 44	40 1/4	- 1/2	-1.2
O	MNGT SCI AMER INC	8- 33	28 3/4	-3 3/4	-11.5
O	MATHEMATICA INC	12- 28	27 3/8	- 5/8	-2.2
O	MATHEMATICAL APP GRP	12- 22	18	0	0.0
O	NATIONAL DATA CORP	5- 26	23 5/8	-2	-7.8
O	PANOPHIC SYSTEMS	8- 30	28 3/4	-1 1/2	-4.9
N	PLANNING RESEARCH	8- 21	18	-2 1/4	-10.5
O	POLICY MGMT SYSTS CP	36- 65	58 3/4	-3 1/2	-5.8
O	PROGRAMMING & SYS	1- 8	5 5/8	- 3/8	-6.2
O	REYNOLDS & REYNOLD	17- 47	43 3/4	+1	+2.3

O	SEI CORP	11- 34	29	+ 1/2	+1.7
O	SHARED MEDICAL SYST	13- 43	38 1/8	-2 1/8	-5.2
O	SCIENTIFIC COMPUTERS	6- 14	12 1/2	- 1/2	-3.8
O	SOFTWARE AD	5- 17	10 7/8	- 1/8	-1.1
N	TYMSHARE INC	12- 30	18 7/8	-1 1/8	-5.3
A	URS CORP	5- 18	18 1/8	- 7/8	-5.1
N	WYLY CORP	7- 17	14	-1	-8.8

PERIPHERALS & SUBSYSTEMS					
P	AM INTERNATIONAL	2- 7	5 1/2	- 3/8	-8.3
A	ANDERSON JACOBSON	8- 28	21 1/4	-3 1/2	-14.1
O	AUTO-TROL TECHNOLOGY	8- 28	25	+ 3/4	+3.0
O	BANCTEC INC	7- 33	18 1/2	+2	+12.1
A	BEEHIVE INT'L	4- 15	12 3/4	- 3/4	-5.5
A	BOLT, BERANEK & NEW	13- 78	72 1/2	-2 1/2	-3.3
O	CAMBOX CORP	2- 4	2 3/8	0	0.0
N	CONTRONICS DATA COMP	8- 28	28 5/8	+ 1/2	+1.8
A	CETEC CORP	4- 12	10 3/8	- 5/8	-5.8
O	COGNITRONICS	2- 20	18 5/8	-3 3/8	-18.8
O	COMPUTER COMMUN.	1- 2	1 3/4	0	0.0

E X C H		PRICE			
		1982-83 RANGE (1)	CLOSE JUN 29 1983	WEEK NET CHNGE	WEEK PCT CHNGE
O	COMPUTER DEVICES INC	4- 21	12 1/4	-2 1/8	-14.7
O	COMPUTER TRANSCEIVER	4- 12	8 1/2	-1 1/4	-12.8
N	COMPUTERVISION CORP	18- 53	47 3/4	- 3/4	-1.5
N	CONRAC CORP	17- 38	22 3/4	- 1/4	-1.0
A	DATA ACCESS SYSTEMS	1- 4	1	+ 1/4	+33.3
A	DATAPRODUCTS CORP	16- 41	28 1/4	-1 1/2	-5.0
A	DATARAM CORP	5- 12	10 1/2	+ 1/8	+1.2
O	DATUM INC	2- 17	14 7/8	+ 1/8	+0.8
O	DAVID JAMISON CARLYL	2- 7	3 5/8	- 1/8	-3.3
O	DECISION DATA COMPUT	3- 16	13 1/8	+ 1/4	+1.5
O	DELTA DATA SYSTEMS	1- 4	2 7/8	- 5/8	-17.8
N	ELECTRONIC M & M	5- 11	10 1/8	- 1/2	-4.7
O	EVANS & SUTHERLAND	18- 50	41 1/2	-4	-8.7
O	GANDALF TECHNOLOGIES	10- 22	11	- 3/8	-3.2
N	GEN'L DATA COMM INC	6- 28	28 3/8	- 7/8	-3.2
O	GENERAL TERMINAL CP	1- 2	3/4	0	0.0
O	GREAT SOUTHWEST INC	2- 6	2 1/2	0	0.0
N	HAZELTINE CORP	7- 31	24 3/8	-5 1/8	-17.3
O	ICOT CORP	3- 10	7 1/2	- 3/8	-4.7
O	INFORMATION INTL INC	10- 22	18 1/2	-1 1/4	-7.0
O	INTEL CORP	21- 78	72 1/2	-3 3/4	-4.9
O	IPL SYSTEMS INC	5- 14	12 3/4	0	0.0
A	LUNDY ELECTRONICS	7- 19	17 3/4	- 1/8	-0.6
A	MSI DATA CORP	14- 38	22 3/8	- 1/8	-0.5
O	NETWORK SYSTEMS CORP	8- 34	33	- 7/8	-2.5
O	OMEX	3- 6	5 1/2	0	0.0
N	PARADYNE CORP	20- 30	23 3/4	+ 1/4	+1.0
A	PENRIL CORP	7- 14	12 1/2	- 7/8	-6.5
O	RAMTEK CORP	12- 26	18	-1 1/2	-7.8
N	RECOGNITION EQUIP	4- 17	15 3/8	+1 3/8	+8.8
O	SCAN DATA	1- 3	1 1/8	0	0.0
N	STORAGE TECHNOLOGY	16- 33	21 7/8	- 7/8	-3.8
O	SYKES DATATRONICS	6- 27	10 1/8	-1 7/8	-15.6
A	T BAR INC	7- 17	15	- 3/4	-4.7
A	TAB PRODUCTS CO	8- 29	28 3/4	+3	+11.6
A	TEC INC	6- 12	8	- 3/8	-4.4
N	TEKTRONIX INC	34- 87	81 3/8	-3 7/8	-4.5
N	TELEX	5- 31	28 3/8	-1 5/8	-5.4
D	TESDATA SYSTEMS CP	3- 14	12 1/8	- 3/4	-5.8
N	TIMEPLEX INC	7- 29	26	-2	-7.1
O	VISUAL TECHNOLOGY	8- 28	22 1/4	-1	-4.3
O	WILTEK INC	1- 4	2	- 1/4	-11.1

SUPPLIES & ACCESSORIES					
N	AMERICAN BUS PRODS	11- 31	25 1/8	-1 7/8	-6.0
O	BALTIMORE BUS FORMS	1- 2	3/4	0	0.0
N	BARRY WRIGHT	13- 31	27 1/4	-2 3/4	-5.1
O	CYBERMATICS INC	1- 2	1 1/2	- 1/2	-25.0
A	DUPLEX PRODUCTS INC	12- 28	23 7/8	- 1/8	-0.5
N	ENNIS BUS. FORMS	16- 45	44 1/8	-3 1/8	-6.8
N	3M COMPANY	45- 80	84 5/8	-1 7/8	-2.1
N	MOORE CORP LTD	28- 51	48 1/4	+ 1/4	+0.5
N	NASHUA CORP	5- 22	15 7/8	+ 3/8	+1.8
O	STANDARD REGISTER	11- 34	32 1/4	- 3/4	-2.2
N	WALLACE BUS FORMS	11- 30	27 7/8	0	0.0

15 pointed questions to ask MSA or any software supplier

These questions will help you when you sit down with individual software companies.

They're tough questions. Relevant ones. And any supplier who is worth his salt should be able to answer them without backpedaling.

Ask MSA

We'll answer all these questions to your satisfaction—plus any others you may have.

In fact, we're probably the best equipped to answer them. Because MSA is *the* software company. We offer the most complete line of totally integrated systems in the software industry, including financial, human resource and manufacturing.

So you avoid the headache of trying to tie together individual systems. (And the even bigger headache of adding to them.)

With MSA's integrated systems, there's no unnecessary duplication of data or effort. Reporting is faster. All your company's information is more timely and accurate—and in the right form.

Our technical edge comes from experience

Staying ahead is easier for a company that's steeped in software technology. MSA has spent years developing, refining, testing and enhancing our systems.

This year alone, we'll invest \$25 million to make sure all our systems are technologically razor sharp. That gives us a decided advantage over flash-in-the-pan technology that may not have the bug-free logic of a more experienced system.

It also gives you a decided advantage over "custom" systems you have to update yourself.

MSA relieves you of that time-consuming burden. We update and enhance your software for a full year. Then we continue this service for a surprisingly low annual fee.

Maintenance includes keeping your system up-to-date technologically. Enhancing it with new features that make it work even harder for you.

And making sure it reflects changes in accounting procedures and government regulations, including 401(k), TEFRA, and FAS52. (That

eliminates a lot of tedious work you normally have to do.)

Save this box. It can help you make an intelligent software decision.

1. Can you offer us a complete range of software systems designed to work together?

Or will we have to piece together a patchwork of systems?

2. Are your systems just record keepers, or can they really help us make decisions?

Can we pull together information from any of our integrated systems? In exactly the form we want it?

3. Can you provide business software for both mainframe and microcomputers?

Do you develop this software yourself or do you simply market it for another company?

4. Are your systems truly online so all of our information is current?

How many of your systems are online? How secure are they?

5. Will my company have to be the one that discovers the bugs in your brand new system?

Just how long have your systems actually been used, and how have they been tested?

6. Will you update your systems as technology advances and regulations change?

What are some of your most recent updates? Will you keep us current on regulatory changes?

7. Do your systems really do everything you say they will?

Or will we have to change them or add to them to get the features we want?

8. How long have you been in business?

What are your revenues? What is your growth record? Where will your company be five years from now?

9. How many systems has your company installed?

How many of these were installed in the past six months? How many of your earlier customers are still using—and liking—your systems?

10. Do your financial systems handle unlimited foreign currencies?

Do your financial systems use a common set of currency exchange rates?

11. Can you link our executives' computers directly to the mainframe—so they can get their own information?

Is that software available right now?

12. How will you make sure our own people thoroughly understand your system?

Do you have educational centers near us, or will we have to travel all the way across the country to find one? Will you be there to help during installation and after?

13. How many of your people specialize in software for my industry?

How many accountants work for you? Human resource specialists? Manufacturing experts?

14. Do your systems have built-in features that make them easier to use?

What happens if someone needs help figuring out a feature? Do you have online documentation that's easy to understand?

15. As my business changes will your system be flexible enough to change with it?

Or will we have to pay a lot to revamp it? Or even regenerate it?

35,000 days of training

At MSA, we make sure your people have a firm grasp of our systems. Last year alone, we conducted more than 35,000 student days of customer training for over 1,800 companies. At education centers all over the world, as well as at our headquarters.

From training sessions to cassettes to complete, easy-to-understand documentation, MSA provides the most extensive Customer Education Programs in the industry.

And MSA systems are just as friendly as our people. Our online HELP feature actually guides users through our systems, and EASY-SCREEN™ lets them design their own screens without creating data processing nightmares.

If there's ever a question or problem with our systems, MSA customers are always close to service.

Our Account Managers are knowledgeable, responsive, and backed by a complete team of industry specialists.

The heart of our integrated systems

It's MSA's General Ledger System. Combined with Accounts Payable/Purchase Order Control and our other systems, it gives your company complete control over your financial information.

Over 800 data process-

ing specialists, accountants, and financial experts work together to make MSA's financial systems the most advanced and most highly integrated in the industry.

MSA has the answers

Whatever your size—whatever your business—MSA has a total software solution.

We'll provide the highest quality integrated online software.

We'll tie your business and manufacturing software systems together, using our exclusive Extended Closed Loop™ manufacturing system.

We'll provide business software for your microcomputers, through our Peachtree Software Company.

We'll even link your microcomputers to your company's mainframe—with MSA's Executive Peachpak™ application

software. A revolutionary concept that lets executives get the mainframe information they need through their personal computers.

Talk to us

If we've whetted your appetite with our 15 questions, clip the coupon below.

We'll send you a concise booklet that will help you even more in your deliberations. We'd also like to send you more information on how MSA can help you plan for software. And on individual systems.

Just fill in the information below, or contact Robert Carpenter at (404) 239-2000.

Management Science America, Inc.
3445 Peachtree Road, N.E.
Atlanta, Georgia 30326.

☐ Please send me a free detailed brochure.
☐ Please send more information on the following systems. (Write numbers from product list)

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Name _____

Title _____

Company _____

Address _____

City _____

State _____ Zip _____

Business Phone () _____

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MSA ready-to-install applications software

1. General Ledger

2. Accounts Payable/Purchase Order Control

3. Budgetary Control/Encumbrance

4. Fixed Assets Accounting

5. Capital Expenditure Tracking

6. Forecasting & Modeling

7. Accounts Receivable

8. Foreign Exchange

9. Inventory & Purchasing

10. Payroll

11. Personnel Management & Reporting

12. ALLTAX™ Taxing System

13. ALLTAX Reporter™

14. Manufacturing Control System (MRP II)

15. Executive Peachpak™

16. Peachtree Software™ business systems for microcomputers

17. Peachtree Software™ office productivity systems for microcomputers

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